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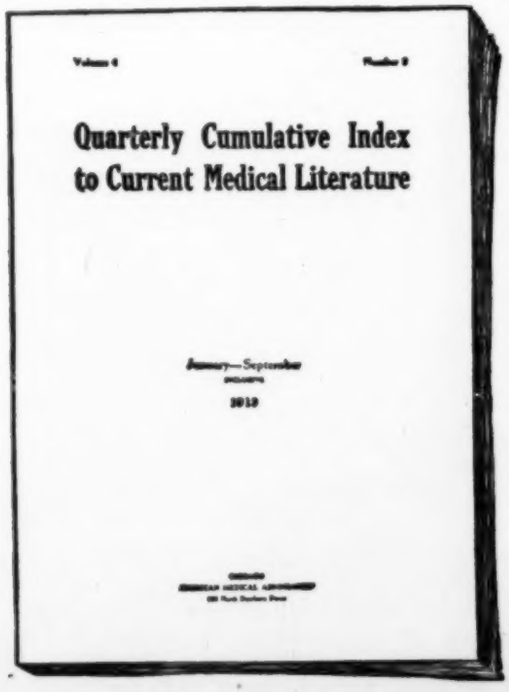

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RESTORATION OF THE NORMAL CARDIAC MECHANISM IN AURICULAR FIBRILLATION BY QUINIDIN

PRELIMINARY REPORT *

ROBERT L. LEVY, M.D.

NEW YORK

Quinin has been used by physicians for its supposed sedative action on the heart for more than fifty years. In 1914, Wenckebach [1] recorded two cases of auricular fibrillation in which the normal cardiac rhythm was restored after administration of 1 gm. of this drug. The effect, however, was of short duration. In one patient, in whom fibrillation occurred in paroxysms, quinin was given repeatedly over a period of years, each time with achievement of the desired therapeutic result. Finally, no effect could be obtained and fibrillation of the auricles persisted. In a number of other patients similarly treated, no alteration in the mechanism of the heart was noted.

Stimulated by these observations, Frey,[2] in 1918, undertook to study the clinical pharmacology of various cinchona derivatives (quinin, quinidin and cinchonin) in patients with auricular fibrillation. He found that the most effective therapeutic agent was quinidin, which is a dextrorotatory stereo-isomer of quinin. Because of its better solubility, quinidin sulphate, rather than the pure quinidin alkaloid, was chosen for more extensive use. In his first communication Frey reported ten cases, in six of which he was able to convert the fibrillatory mechanism into the normal sinus rhythm.

During the last three years, reports of one hundred and one cases of auricular fibrillation treated with quinidin have appeared in the foreign literature;[3] in fifty-nine (58.4 per cent.) the normal rhythm was restored. The duration of effect has usually been short, from a few days to a month. The longest period during which normal rhythm was observed was four months. The usual dosage employed has been 0.4 gm. by mouth three times daily before meals, or, less commonly, 0.2 gm. five times a day. Regularization of the rhythm has occurred, for the most part, on the second or third day of treatment, though as much as 11 gm. has on occasion been required to produce the desired effect. It has been found advisable to give a preliminary dose of from 0.2 to 0.4 gm. to test for the possible presence of an idiosyncrasy to alkaloids of the cinchona group; for in two cases in Frey's series, grave, though not fatal, symptoms, evidenced chiefly by depression of the respiratory center, occurred after a total of 1.8 gm. had been given. Unpleasant effects, such as palpitation, headache, diarrhea, nausea or vomiting have occasionally been noted. A tachycardia usually preceded the onset of normal rhythm. Electrocardiograms made while the heart rate was rapid have in some instances shown the presence of auricular flutter as the transitional mechanism. In other cases, no transition between fibrillation and normal rhythm has been demonstrated. In still a third group, in which it was not possible to establish normal rhythm, the character of the waves in the curves showing fibrillation has temporarily become more coarse or there has been transient auricular flutter with reversion to fibrillation. Inversion of the T-wave of the electrocardiogram and prolongation of P-R (conduction) time have also been observed. There has been no significant effect on urinary output or blood pressure.

Knowledge concerning the mode of action of quinidin on the mammalian heart is meager. Hofmann [4] has shown in dogs' hearts perfused with solutions of the drug a diminution in the excitability of the auricular muscle to electrical stimulation. Strong induction shocks, effective in producing fibrillation of the auricles when the heart was perfused with Locke's solution, failed to elicit this arrhythmia when quinidin was added to the perfusate. The heart rate was slightly slowed. This is the only bit of experimental evidence on which a theory of the mode of action of the alkaloid may be based. In the isolated frog's heart, Santesson [5] many years ago showed that quinidin caused retardation of rate and diminution of the force of muscular contraction.

Up to the present time, quinidin sulphate has been administered by mouth, in gelatin capsules, to four patients in the Hospital of the Rockefeller Institute. These patients have been under observation prior to treatment for periods ranging from one month to one and a half years, and are known to have been fibrillating for at least these lengths of time.

* From the Hospital of the Rockefeller Institute for Medical Research.

1. Wenckebach, K. F.: Die unregelmässige Herztätigkeit und ihre klinische Bedeutung, 1914, pp. 125 and 128.

2. Frey, W.: Ueber Vorhofflimmern beim Menschen und seine Beseitigung durch Chinidin, Berl. klin. Wchnschr. **55**: 417, 451, 1918.

3. Frey, W.: Weitere Erfahrungen mit Chinidin bei absoluter Herzunregelmässigkeit, Berl. klin. Wchnschr. **55**: 849, 1918. Von Bergmann, G.: Zur Chinidintherapie des Herzens, München. med. Wchnschr. **66**: 705, 1919. Klewitz, F.: Ueber Chinidin bei Vorhofflimmern, Deutsch. med. Wchnschr. **46**: 8 (Jan. 1) 1920. Schott, E.: Zur Frage der Chinidintherapie, Deutsch. Arch. f. klin. Med. **134**: 208 (Feb.) 1920. Wisser: Inaug. Diss., Cologne, 1920 (cited by Schott). Leschke, E., and Ohm, R.: Die Beurteilung therapeutischer Erfolge bei Vorhofflimmern mit Herzinsuffizienz auf Grund der Ohmschen Venenpulskurve, München. med. Wchnschr. **68**: 65, 1921. Benjamin and von Kapf: Ueber die Behandlung der Arhythmia perpetua mit Chinidin, Deutsch. med. Wchnschr. **47**: 10, 1921. Jenny, E.: Chinidin als Herzmittel, Schweiz. med. Wchnschr. **51**: 272 (March) 1921.

4. Hofmann, F. B.: Ueber Vorhofflimmern und seine Unterdrückung durch Chinidin, Ztschr. f. Biol. **71**: 47, 1920.

5. Santesson, C. G.: Ueber die Wirkung einiger China-Alkaloide auf das isolierte Froschherz und auf den Blutdruck des Kaninchen, Arch. f. exper. Path. u. Pharmakol. **32**: 321, 1893.

On the days on which quinidin was given, electrocardiograms were made every one or two hours and were taken several times daily thereafter. In two cases a normal sinus rhythm was restored. In one of these, auricular flutter intervened between fibrillation and the normal rhythm; in the other, an intermediary transitional mechanism, not sufficiently regular to be classed as flutter, was recorded. In the third patient, transient auricular flutter of only a few hours' duration was followed by a return to fibrillation. In the fourth case there was a temporary increase in heart rate without alteration of mechanism. In this patient complaint of headache and palpitation, together with the appearance of occasional ventricular premature contractions, induced discontinuation of the drug.

That the cardiac mechanism may be so strikingly and quickly altered by relatively small amounts of an alkaloid which exerts its action on the heart without producing any disturbing systemic effects is truly remarkable and worthy of note. It is for this reason that the appended cases are now recorded in this preliminary report. An extensive study of quinidin, both clinical and experimental, is in progress.

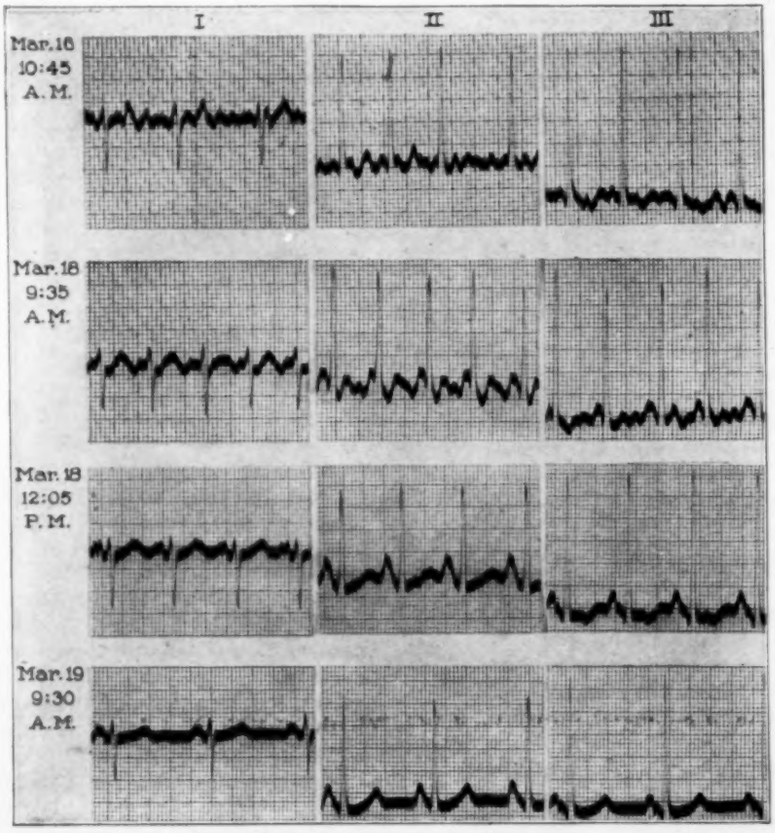

Fig. 1 (Case 1).—March 16, control, auricular fibrillation and right ventricular preponderance. March 17, quinidin sulphate, 0.4 gm. March 18, quinidin sulphate 0.4 gm. at 7, 9, and 11 a. m. Electrocardiogram at 9: 35 a. m. shows auricular flutter. At 12: 05 p. m., normal rhythm, with rate 94, P-R time 0.18 to 0-19 second, T-Wave negative. March 19, rate 64, P-R time 0.16 to 0.17 second, T-wave positive.

REPORT OF CASES

CASE 1 (Hospital No. 4330).—S. G., a man, aged 26, Russian, machine operator, whose case was diagnosed as chronic valvular heart disease; mitral stenosis and incompetence; auricular fibrillation, was admitted, Feb. 19, 1921, complaining of cough, dyspnea and precordial pain. There was no history of any infectious disease, nor was the patient subject to sore throats. He was first aware of having heart disease in 1913, when he suffered from palpitation and spat up a cupful of bright red blood. He had twice been a patient in other hospitals on account of his cardiac condition. He was rejected for army service in 1917 because of heart disease. During the two months prior to admission, dyspnea and cough had increased, and he had pain in the region of his heart.

Physical examination revealed moderate cyanosis of the cheeks, lips, ears and fingers. The heart was enlarged, extending 4 cm. to the right in the fourth interspace, and 16.5 cm. to the left in the sixth interspace. The signs were those of mitral stenosis and incompetence with complete cardiac irregularity. The heart rate varied from 80 to 120, with 60 to 95 beats coming through at the wrist. The blood pressure was 120 mm. of mercury systolic, 80 diastolic. There were râles over both lower lobes of the lungs. The liver was not enlarged. There was no visible edema.

With rest, fluid intake restricted to 1,500 c.c., and a light diet, the weight fell from 61.2 to 58.2 kg. in a week. Cough and dyspnea became less troublesome. The râles in the lungs disappeared. The heart rate was extremely labile, but did not significantly change its general level. He received no medication until March 17; on this day he was given quinidin sulphate, 0.2 gm., at 11 a. m. and at 1 p. m. No objective or subjective changes followed this small preliminary dose, which was given to test for the presence of a drug idiosyncrasy.

March 18, he received quinidin sulphate, 0.4 gm., at 7, 9 and 11 a. m. An electrocardiogram made at 9:35 a. m. showed that the auricles were fluttering; at 12:05 p. m. a normal sinus rhythm with rate of 94 was apparent (Fig. 1). The patient was unaware of the fact that the cardiac mechanism had altered, and noted no unusual symptoms which might have been ascribed to the quinidin. It is of interest that the T-wave, which was downwardly deflected when normal rhythm was first established, became upright on the following day.

As is evident from the chart (Fig. 2), the heart rate continued to fall, and for twelve days following treatment ranged from 45 to 72 per minute. There was no noteworthy change in either systolic or diastolic blood pressure. The urinary output was slightly diminished on the day of quinidin administration, and somewhat exceeded the usual level during the next twenty-four hours. The total amount of quinidin given was 1.6 gm. in two days. The patient remained comfortable, and on March 23 was allowed out of bed in a chair for the first time. The normal rhythm was maintained for twelve days. On the thirteenth day, the auricles again began to fibrillate, the heart beating at the rate of 90 per minute, with pulse deficit of 8. As before, the patient was unaware of the fact that the cardiac mechanism had altered.

CASE 2 (Hospital No. 3968).—P. O., a man, aged 54, boilermaker's assistant, diagnosed as having syphilis, chronic myocarditis and auricular fibrillation, was first admitted to the hospital, Sept. 29, 1919, complaining of palpitation and a sense of oppression in the chest. He had two mild attacks of rheumatism, the first in 1912, the second ten months before entrance to the hospital. He had a chancre at the age of 23, and received antisyphilitic treatment for one year. He had been a heavy drinker up to the age of 40, and was an immoderate smoker and hard worker. His present illness began six months before admission with a smothering sensation in the chest; two weeks later edema of the feet appeared, and he was put to bed for three weeks under a physician's care. Since that time he had been unable to return to work, and complained particularly of the fact that his heart "pounded like an engine," especially at night.

Physical examination disclosed very slight dyspnea, a somewhat enlarged heart, extending 4 cm. to the right in the fourth interspace, 13 cm. to the left in the fifth interspace, and total cardiac irregularity. There was no evidence of valvular disease. The blood pressure was 142 systolic and 70 diastolic. There was no edema. The Wassermann reaction on the blood serum was ++++. The patient remained in the hospital until Jan. 20, 1920, during which time his heart rate was extremely labile, ranging from 130 to 150, with a large pulse deficit when undigitalized, but responding promptly to digitalis or strophanthin therapy. He left the hospital with instructions to continue taking digitalis each day. Because of vertigo and palpitation he was readmitted, May 27, and remained in the hospital until Aug. 27, 1920. Since that time he continued to take digitalis, 0.2 gm. each day, but did not return to work. He presented himself for examination about once a month. Throughout this entire period, during which electrocardiograms were frequently made, the cardiac mechanism remained constantly that of auricular fibrillation with occasional premature contractions of ventricular origin. He continued to take 0.2 gm. of digitan each day up to the time of the present readmission, March 10, 1921.

Physical examination at this time showed the heart to be of about the same size as on the first examination, with auricles still fibrillating. The blood pressure was 124 systolic and 78 diastolic. The heart rate was from 90 to 95, with radial rate from 85 to 90. Digitalis was discontinued, and the administration of quinidin sulphate begun.

The results of quinidin treatment were as follows (Fig. 3):

March 10, 0.2 gm. at 3 and 6 p. m. No effect was evident.

March 11, 0.2 gm. at 7, 9 and 11 a. m., and at 1 and 3 p. m. Tachycardia and palpitation followed, but were of only several hours' duration.

March 12 and March 13, the drug was omitted.

March 14, 0.4 gm. at 8 a. m., 12 noon and 4 p. m. There was an increase in heart rate to from 125 to 130, with a deficit of from 12 to 15 beats, but no discomfort.

March 15, 0.4 gm. at 8 and 10 a. m., 12 noon, and 2 and 4 p. m. The heart rate continued rapid, ranging from 120 to 130, with from 80 to 90 beats coming through at the wrist. An electrocardiogram made at 2:50 p. m., after 1.6 gm. had been given on this day, showed a transition between fibrillation and normal mechanism. There may be seen a number of waves, which are to be regarded as evidence of auricular contractions rather than of fibrillation. They are not, however, of sufficient regularity to justify designating the mechanism as auricular flutter. An electrocardiogram at 4:45 p. m. revealed establishment of the normal sinus rhythm, with a rate of 80. The patient was unaware of the altered cardiac mechanism until that night, when he remarked upon the absence of the usual "pounding" of his heart. During the following twenty-four hours the heart rate gradually fell to 70, and has remained between 55 and 70 for the last fifteen days. There are occasional premature auricular contractions. It is worthy of note that the T-wave of the electrocardiogram made on March 15 is upwardly directed in Leads II and III, whereas, in the curve made the following day, the corresponding deflections are in the downward direction. There was slight increase in the urinary output on the two days following quinidin administration. There was a slight fall in systolic blood pressure on the day after quinidin was discontinued, namely, from 128 to 104 mm. of mercury. The diastolic level remained unchanged; by the following day the systolic pressure had returned to its former level. The patient is comfortable and is now up and about. The total amount of quinidin given was 4.6 gm. in six days.

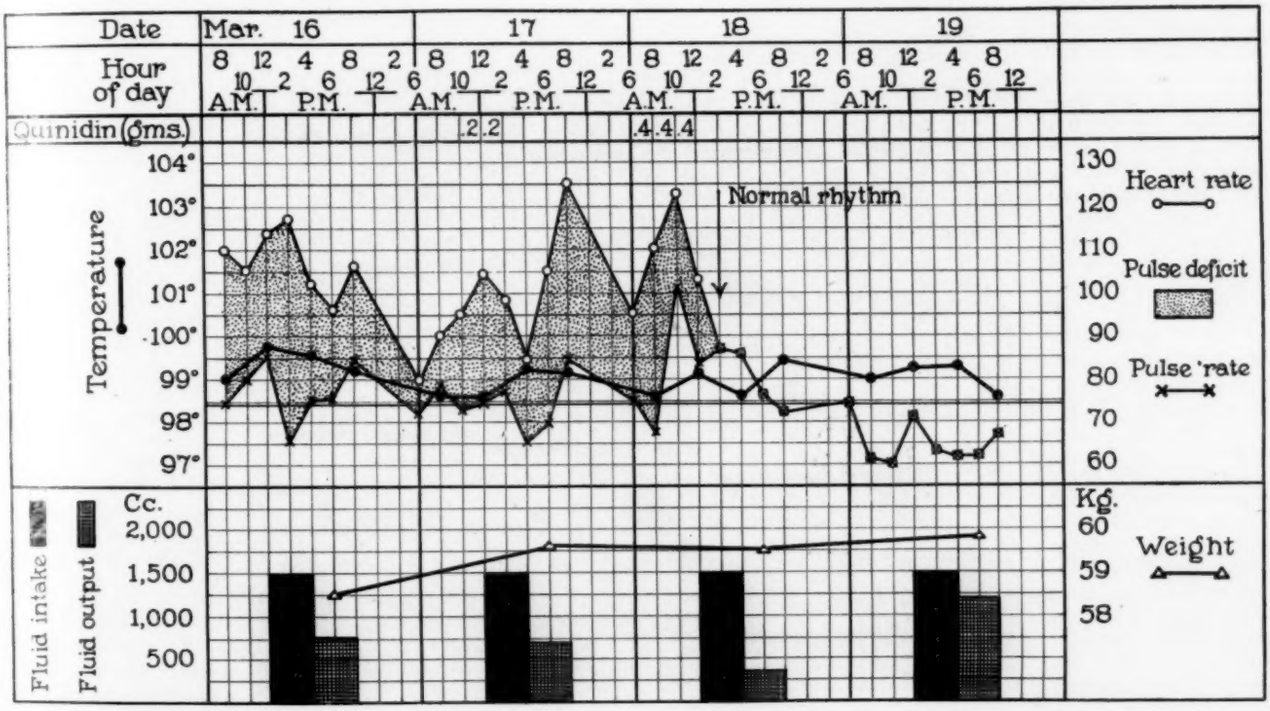

Fig. 2 (Case 1).—Clinical chart.

CASE 3 (Hospital No. 4274).—M. R., a schoolboy, aged 18, American, whose case was diagnosed as chronic valvular heart disease; mitral stenosis and incompetence; aortic incompetence; auricular fibrillation; chronic tonsillitis; tonsillectomy, was admitted, Nov. 29, 1920, complaining of hemoptysis, palpitation and precordial pain. He was subject to frequent attacks of tonsillitis, and had two attacks of rheumatic fever—one at 11, the second at 12 years of age. He first noticed dyspnea on going upstairs in 1912, and was then told that he had rheumatic heart disease. He continued at school, though under observation by his physician, with alternating periods of comfort and of ill health. During the month preceding admission to the hospital, dyspnea increased and he had two hemoptyses.

Physical examination disclosed large, infected tonsils. Cardiac dulness extended 5 cm. to the right in the fourth interspace and 14 cm. to the left in the sixth interspace. There were signs of both mitral and aortic valvular disease, and auricular fibrillation. The blood pressure was 126 systolic and 30 diastolic. For six weeks the boy was kept in bed without

medication. The heart rate varied from 80 to 95, with pulse deficit from 10 to 15. Occasional palpitation was the only complaint. January 28, tonsillectomy was performed under local anesthesia; convalescence was uneventful, the cardiac condition remaining essentially unchanged.

Quinidin sulphate was given as follows:

February 3, 0.1 gm. at 12 noon and 5 p. m.

February 4, 0.2 gm. at 12 noon and 5 p. m. There was no evident effect.

February 5, 0.2 gm. at 10 a. m., 12 noon, 4 and 8 p. m. After the third dose there was some acceleration of heart rate of which the patient was aware.

February 6, the drug was omitted.

February 7, 0.4 gm. at 10 a. m. and 4 p. m. The patient complained of palpitation and headache. The heart rate at 8 p. m. rose to 126. The electrocardiogram revealed a number of left ventricular premature beats.

February 8, 0.4 gm. at 10 a. m. and 1 and 5 p. m. The heart rate was more rapid. An electrocardiogram at 9:35 a. m. revealed a series of fibrillatory waves coarser than on the previous day, and more ventricular extrasystoles. At 5:55 p. m. the electrocardiogram showed in places a mechanism resembling auricular flutter, in other portions coarse auricular fibrillation. The ventricular premature contractions were quite numerous. During the night the tachycardia subsided.

February 9, no ventricular extrasystoles were seen; 0.4 gm. at 11:30 a. m., and 1:30 and 3:30 p. m. The heart rate again became quite rapid, but the extrasystolic arrhythmia did not reappear.

February 10, there was marked tachycardia, the rate rising to 130, with a pulse deficit of 25. The temperature likewise was elevated in the evening, reaching 102. At this time the patient complained of precordial pain. Physical signs were unchanged. A total of 4.6 gm. of quinidin sulphate was given during a period of seven days. The following day the electrocardiogram revealed a return to fine fibrillation. The temperature was normal, and the heart rate had assumed its usual level. The urinary output during this entire period remained essentially unchanged. The further course of the patient in the hospital was not remarkable.

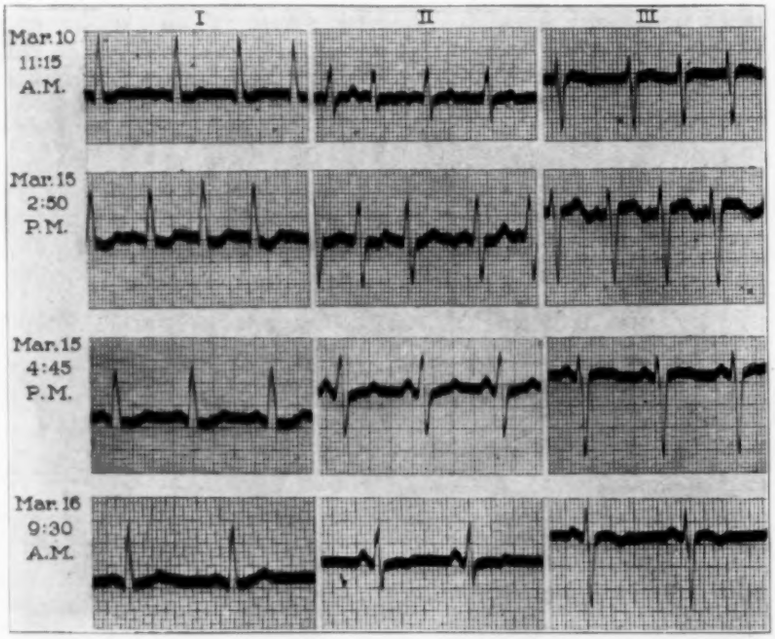

Fig. 3 (Case 2).—March 10, control, shows auricular fibrillation and left ventricular preponderance. Quinidin sulphate, 0.4 gm. March 11, quinidin sulphate, 1 gm. March 12 and 13, drug omitted. March 14, 1.2 gm. March 15, quinidin sulphate, 0.4 gm. at 10 a. m., 12 noon, and 2 and 4 p. m. Electrocardiogram at 2:50 p. m., after 1.6 gm. had been given on this day, shows a transition between fibrillation and the normal mechanism. There are seen a number of waves which are to be regarded as evidence of auricular contractions rather than as fibrillation. They are not, however, of sufficient regularity to justify designating the mechanism as auricular flutter. Electrocardiogram at 4:45 p. m. shows a normal sinus rhythm, with rate of 80, P-R time 0.15 to 0.16 second, T-wave positive. March 16, rate 70, P-R time 0.15 to 0.16 second, T-wave negative. Occasional auricular premature beats, not shown in section of curve reproduced.

CASE 4 (Hospital No. 3983).—R. R., a woman, aged 31, Russian, housewife, with a diagnosis of chronic valvular heart disease; mitral stenosis and incompetence; aortic incompetence; auricular fibrillation, was first admitted to the hospital, Oct. 23, 1919, complaining of shortness of breath and weakness. There was no history of the usual infectious diseases. She was told at the age of 18 that she had heart disease, but had no symptoms save occasional dyspnea after strenuous exertion. The birth of two children and several abortions put an unusual strain on her heart, and for the last two years there was progressively increasing dyspnea.

Physical examination disclosed moderate cardiac enlargement, dulness extending 4 cm. to the right in the fourth interspace, and 12 cm. to the left in the fifth interspace. The signs were those of mitral and aortic valvular disease with auricular fibrillation. There were râles over both lower lobes of the lungs, but there was no edema of the extremities. The heart rate was rapid, from 100 to 130, with a pulse deficit of from 20 to 40. On this, as on two subsequent admissions to the hospital, there was prompt response to digitalis or strophanthin therapy. The patient was kept under continuous observation, reporting for examination about once a month.

The present admission, Feb. 14, 1921, was because of pain in the left side, believed to be due to a small infarct in the left kidney. February 19, she received digitan, 0.6 gm. The symptoms and signs promptly abated.

Quinidin sulphate was given as follows:

February 24, 0.2 gm. at 12 noon and 5 p. m. She complained of headache in the evening.

February 25, 0.4 gm. at 1 and 6 p. m. At 8 p. m. there was a sharp rise in heart rate with complaint of headache.

February 26, the heart rate resumed its usual level; the headache was gone. On this day, as well as on February 27 and 28, she received 0.4 gm. at 10 a. m., and 2 and 6 p. m. Each dose was followed by tachycardia, which subsided within from two to four hours after the drug had been given. While the rate was rapid, the patient complained of headache and palpitation. She received a total of 4.8 gm. in five days. Save for the appearance of an occasional right ventricular premature contraction, there was no essential change in the cardiac mechanism or in the form of the electrocardiogram.

COMMENT

It is evident from a survey of the literature, as well as from observation of this small group of cases, that the factors which determine the success or failure of quinidin in altering the mechanism of the heart are not clear. We have been led to give the individual doses at more frequent intervals than has been recommended (Cases 1 and 2) for two reasons: first, because it was noted that in the two unsuccessfully treated patients, the effects induced by a given amount of the drug, as evidenced by tachycardia and changes in the electrocardiogram, tended to disappear in the course of from two to four hours; second, because Wiechmann [6] has shown that the greater the fractionation of dosage, the greater is the amount of quinidin excreted. To achieve optimal therapeutic effects it seems reasonable, at least for the present, to administer as much of the drug in as

6. Wiechmann, E.: Ueber die Ausscheidung der Chinidins im Harn, Ztschr. f. d. ges. exper. Med. 7: 155, 1918.

short a period of time as is consistent with the factor of safety of toxicity. It is hoped that work which is now in progress may help to answer these as well as a number of related questions.

NEW PRINCIPLES IN PLASTIC OPERATIONS OF THE EYELIDS AND FACE *

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Six years of the great war gave to surgeons a saddening but never dreamed of opportunity for plastic operations. The uncommon variety of cases of defects of the eyelids and face made it possible that even those who were especially interested in this line, even those who performed a great number of reconstructive operations, found again and again that the well-known methods, brilliant and useful as they are, have only a limited value and are to be utilized only in certain typical forms of defects.

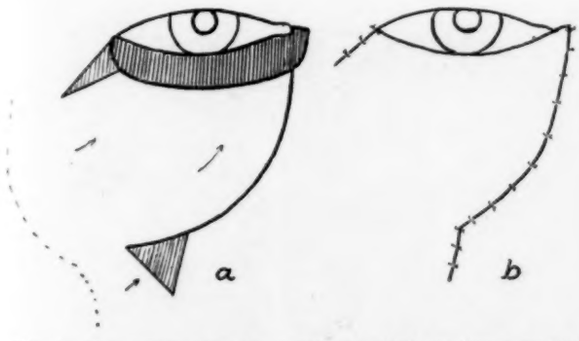

Fig. 1.—The arrows show the manner in which the flaps were slid.

In our portion of the war area, even at the beginning of the war, there were so many unusual cases that we were forced to find new methods. It became necessary for us to free ourselves from certain rules and principles which suddenly approached the antique. Thus it happened that within a very short time every surgeon who was interested in reconstructive work found that his points of view and his previous ideas about the subject had changed and developed to a rather wonderful extent.

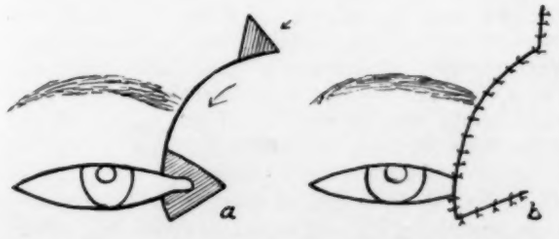

Fig. 2.—A single sliding flap served for this purpose.

The old methods of Dieffenbach, Burow, Fricke, Blasius, Knapp and Richet are so commonly known that it is unnecessary to describe them.* Nevertheless, I should like to point out the disadvantages that have been, and still are, to be avoided by modifications in some cases, and by choosing in most cases a radically different solution of the task.

The free grafting of skin I employ only in defects of the skin of the upper eyelid when scars or other defects prevent a flap from the temporal region. I

Fig. 4 (Case 2).—Appearance of patient before and after operation.

principally avoid any free graftings on the lower lid because the concavity of the base could often cause a horizontal wrinkle and result in an ugly ectropion.

Dieffenbach's method and its modifications have the fault in common that, after the operation, there remains a secondary defect which has to be filled up with free grafting or by the longer process of granulation. In either case there will be scars to a conspicuous degree and—after the free transplantation—scars and differently colored skin.

The original method of Burow sacrifices just as large a piece of intact skin as the original defect itself.

The methods of Fricke, Blasius and Knapp are very good and often indispensable. However, we can solve

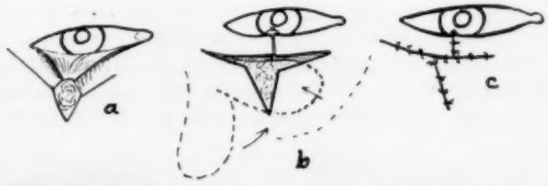

Fig. 5.—Working chart for remaking the lower eyelid.

most problems without them by methods that will result in fewer lines and fewer scars. The nourishment of the pedunculated flaps is another question that can be easily solved in the greater number of cases.

In papers which I read before the medical society in Budapest in 1912, 1913 and 1914, papers later published in the Hungarian journals in extenso and in the German journals by extracts, I introduced entirely new methods which, in cases of new growths of the lower lid, or the nasal or temporal corner of the eyelid, proved simple and highly successful.

The method is to cover the skin defect from the immediate neighborhood of the defect without any real pedunculated flap. In order to be able to slide the greatest quantity of skin with the shortest possible wound, we must naturally utilize a curved cut and slide the tissue used for covering the defect in a bow. Figures 1 and 2 illustrate applications of this principle. Those who have become acquainted with this simple method usually adopt it, and turn to the older methods

* Owing to lack of space, this article is abbreviated in THE JOURNAL by the omission of several illustrations. The complete article appears in the author's reprints.

only in cases in which the newer one is impracticable, for instance, when plastic surgery of the entire upper lid is necessary.

The curved incision should have the form of a quarter ellipse and be about four times as long as the length of the necessary sliding. At the end, a small

Fig. 7 (Case 4).—Appearance of patient before and after operation.

triangle of skin should be removed to make possible an easier sliding as well as to prevent the possibility of conspicuous hills or wrinkles.

The dotted line in the drawing shows the boundaries of the necessary undermining. This subcutaneous mobilization is of the utmost importance. In cases in which there is a greater degree of defects in the fat and fascia I employ pedunculated flaps or flaps of fat and fascia. In cases of more extensive defects it is frequently necessary to make a few catgut sutures to fix the flap in its new place. This results in great help

Fig. 10 (Case 6).—Appearance of patient before and after operation.

in the healing of the skin wounds, as it reduces the tension of the skin suture to a minimum.

When the sliding tissue is to form the inner corner of the lower lid I always cut the edge of the flap into two lamellae about 8 mm. long. The inner lamella should be fixed to the nasal ligament with catgut sutures, or, if the ligament is destroyed, directly to the periosteum or the deep-fixed fascia, and this will carry the weight and tension of the flap. Through this the suture of the superficial lamella will not carry any tension, and will heal readily. Any surgeon who has operated on torn-down eyelids knows actually that sutures in the inner corner very often cut through the skin and frequently cause annoyance and imperfect cosmetic results. This deep-fixing of the flap, or rather the corner of the flap, has aided me materially and has always resulted in much better cosmetic effects (Fig. 3).

This little method I have applied continuously since just before the war in 1914, and early in 1915 I lectured about it before the Royal Medical Association in Budapest. Kuhnt, quite independently, evolved the same idea and described it as his method in 1916 before the Heidelberg Congress.

Case 2 (Fig. 4) is one of those mutilations that became rather common during the war. This particular soldier was wounded by a piece of shrapnel. He had a large wound, partial ectropion and a defect of the os zygomaticum; consequently there was a deep scar fixed to the bone. After total removal of the scar tissue I took a pedunculated flap of fat from the face.

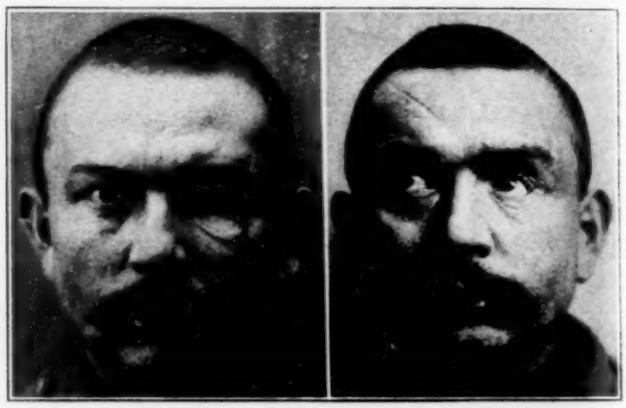

Fig. 13 (Case 7).—Appearance of patient before and after operation.

The basis of the flap was laterad from the defect and the edge was downward. This flap of fat and fascia totally filled up the hole and was fixed with one catgut suture. The method of sewing the wound is shown in Figure 5.

In somewhat similar cases but when the defect is of a longer and narrower form, the sliding method I have described can be adopted for covering the defect. Although, as may be imagined, we had to operate in a great number of coloboma cases and long narrow defects, I never applied a pedunculated flap to these. Even certain smaller defects of the upper lid can be successfully handled without a flap, or, at the worst, can be covered with a sliding flap.

Case 3 (Fig. 6) is one of those which would suggest the pedunculated flap to most surgeons but which, as the result proves, can be corrected by the simple sliding. The photograph made after the operation shows how much less scar remains after this, compared with the scar that remains after a pedunculated flap.

Case 4 (Fig. 7) is a combination of coloboma of the eyelid, that of the nose, and a large open defect of the anterior wall of the antrum of Highmore. This was one of those cases which induced me to practice the radical operation of the Highmore and frontal antrums.

In this case I could clean the antrum from outside and, after filling out the hole with a strip of gauze and pulling the end of the strip through the large opening I made toward the nose, I could, as in fact I had to, perform the plastic operation immediately. The healing of the wound was not disturbed by any suppuration. The method of covering the defect is clearly shown by the scars in the second picture.

Case 5 (Figs. 8 and 9) is characterized by remarkably great inclination to keloids and is combined—similarly to the previous case—with a large defect and empyema of the Highmore sinus. The conjunctiva shows an unusual degree of edema caused by the disturbance of the circulation. Figure 9 shows the opened sinus and the form and size of the defect after the removal of the scar tissue. The appearance of the patient after operation proves that the cosmetic result is greatly disturbed by the keloids, but, on the other hand, shows that we can cover unusually large defects without free grafting and pedunculated flaps.

Case 6 (Figs. 10 and 11) shows a totally torn-down lid. The greater part of the skin of the lid is destroyed and the lower margin of the orbit is missing, the anterior half of the zygomatic bone being destroyed.

Fig. 16 (Case 10).—Appearance of patient before and after operation.

Figure 11 shows the defect after removal of the scars; but there is a wound in the upper corner which requires explanation. In such cases when the medial or lateral ligament of the eyelids was injured and, as a consequence of this injury, the corner slid down, we had no methods and the eye surgeons generally tried to correct the location of the lid corners by elevation through a pedunculated flap. This, however, usually did not give a satisfactory result. In these cases I commonly made a half-moon-shaped deep cut around the corner which was to be elevated, mobilized the tissues deeply, and fixed them in the necessary height to the periosteum. Whenever possible I sewed the ligament back to its original place. The result was fortified by the method of uniting the skin wound—a scheme explained by Figure 12.

After elevating the inner corner I filled up the deep hollow with pedunculated fat-fascia flaps, in this particular case with two big flaps sewed on each other so that on the defect there came three layers, two of them being fat-fascia, and the third the slid skin. I decidedly prefer the pedunculated fat-flaps because the free transplanted fat tissue often necroses. The largest section of free transplanted fat that I ever use is about half the size of an English walnut which I sometimes apply when my method of subcutaneous solution of deeply fixed scars of the orbital margin is indicated.[1]

Cases 7 and 8 (Figs. 13 and 14) give an opportunity to show the application of the fat-fascia flaps for filling deep scars. On Patient 8 I released the fixation of deeply fixed scar of the lower lid, combined with free

Fig. 17 (Case 11).—Appearance of patient before and after operation.

transplantation of a small piece of fat tissue. As the edge of the eyelid was too long I had to shorten it later.

In Case 9 (Fig. 15) there was coloboma of the upper lid, and a deep defect of soft tissues and bone. The frontal sinus was open. At the back wall there was a fracture covered with loose rags of mucosa. This, however, did not prevent the periodic seepage of the cerebrospinal fluid. Whenever this happened, about once a week, the patient fainted and had to stay in bed for a couple of days. In this condition he was a complete cripple when, about one year after receiving the wound, he was sent to the hospital for war cripples where I performed most of my plastic operations. In this case and likewise in Case 10 (Fig. 16) which, excepting for the outer defects, was quite similar, I utilized a large bridge of the periosteum through which I covered the back wall of the frontal sinus, and above

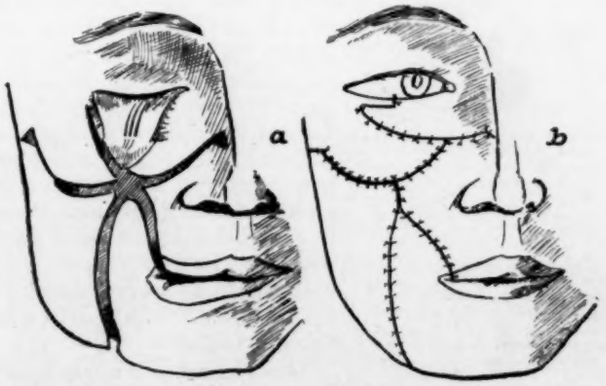

Fig. 18 (Case 11).—Method of removing deep scar tissue; small flaps that were slid into place; sutures.

it came a pedunculated flap of fascia. The result was entirely satisfactory. From the sixth day on after the operation the first patient, the one with fainting spells, felt quite strong and, several months later, I learned that he was working regularly in a factory. In both

1. Published in 1912; abstracted in Jahresbericht in 1913.

these cases the most interesting result was the excellent function of the double pedunculated periosteum flaps, which proved a strong filling in the bone defect.

Case 11 (Fig. 17) is characterized by a deep scar in the form of a star, by the unusually large coloboma and by a healed open fracture of the lower jaw which resulted in a very deep fixed scar. Figure 18 shows the method of reconstruction. The deep defect on the jaw was eliminated by using deep pedunculated flaps

Fig. 19 (Case 12).—Appearance of patient before and after operation.

of fat-fascia sewed upon each other. The result was satisfactory in every respect.

In Case 12 (Fig. 19) the injury resulted in a large oval hole in the face, a part of the hard and soft palate was destroyed, and the greater part of the zygomatic bone was missing. The filling in of such a hole in the face is one of the most difficult of all tasks because the transplanted or sliding flap has no base. I was therefore forced to make a base for the flap. So far as I know the surgeons like to use, in such a case, a piece of fascia transplanted from another part of the body. Being anxious to solve the problem without free transplantation, I tried to pull down a bridge of mucosa from the nose. By this, the medial third of the hiatus was covered. I then undermined the surrounding scar tissue around the hole and turned the surface inward. By this operation almost all of the hole was covered. After this I made the curved cuts as shown in Figure 20, undermined the skin, and took two big pedunculated fat flaps and turned them above the hole. I fixed the mucosa bridge and the turned-in tissue with catgut mattress sutures to the pedunculated flaps, and these to each other in the same way, so that in and upon the opening there were three layers of tissue. The fourth was the slid tissue.

Fig. 20.—Exterior sliding flaps to cover fat tissue which was made to form a foundation for the aperture, the fat being slid from inside the cheek.

The picture after the operation is not very flattering as I put a common prosthesis in the eyehole. I wished only to demonstrate that there is room enough for a full-sized prosthesis. For cases of this nature we had to order special prostheses which, for about forty of my patients, were made by the artist Fritz Muller of Wiesbaden. He came to Budapest regularly before and during the war.

Case 13 (Fig. 21) presented a similar difficult task but in a greater measure. In this instance I used a large bridge of mucosa which has partly lined the pedunculated deep flaps and the slid tissue. The scars on the picture show clearly that I used a modified flap of Knapp slid from the frontal region. As the eye was too low I elevated the entire contents of the orbit, using the method described above. This, however, happened only six months later.

The last case presented herewith (Fig. 22) cannot be regarded as a case fit for eye surgeons, but I could not resist the temptation to perform an operation which presented an interesting problem and appeared to make satisfactory results possible. The kind of injury in itself is unusual. The man sat on the top of a railroad train on his way to the battlefield. A bridge struck him on the forehead and, instead of breaking his skull, caused a fracture of both zygomatics and, in fact, the whole upper jaw across the face. In the photograph the entire face is hanging down on the *open* lower jaw, and is mobile as it can be elevated about half an inch by pushing upward on the upper teeth. I discussed this problem with two colleagues, Dr. J. Szabo and Dr. H. Salamon, who, in the same hospital, had a large orthodontic section for war cripples. They made a prosthesis which was put on the upper teeth and had a metal bow with hooks on it in front of the mouth. Then they made a crown of plaster of Paris for the head. This likewise had hooks with the aid of which the hanging-down face was elevated by the use of strong rubber ribbons (Fig. 23). When this was ready I opened the face, made the edges of the fractured bones fresh, transplanted a piece of the tibia so as to build up the back of the nose, and closed the big hole after applying the rubber ribbons. The patient had this fixation for three weeks, but we had to remove the ribbons and the crown occasionally for half an hour at a time because, although it was lined with cotton, the patient naturally suffered very much from the strong pull. The fracture healed in three weeks, and after the removal of the prosthesis from the upper teeth he could

Fig. 22 (Case 14).—Appearance of patient before and after operation.

chew without much difficulty, a function which he had not been able to perform for more than a year. As shown by the photograph, the left eyeball stood about 9 mm. deeper than the right. After the operation, by the elevation of the orbit, the eyeball was likewise elevated. The left eye showed rupture of the retina and choroid, the first a rather rare, the second a quite common consequence of concussions in the neighborhood of the eyeball.

All these, in fact all of my several hundred plastic operations, were performed under local anesthesia (2 per cent. procain, and to every 10 c.c. of solution, 6 drops of epinephrin solution). The patient never had cause to regret that he was not narcotized, as the operations were painless. The after-effects of procain, and those of shock before and during the operation, can be avoided by half a gram of barbital, and this will avoid the rare after-effects of procain.

All of these cases I chose intentionally because each and every one demonstrates something not generally known, and my intention was not merely to show a few fairly good results of reconstructive operations but to give a few data on this interesting branch of surgery, data which I hope will be useful for those who like to operate in such atypical cases, and for those on whom such operations may be performed.

Fig. 23.—The upper jaw was held in place with this contrivance. The head piece was heavily padded, and the rubber bands, held by hooks, exerted a hard and constant tension.

Two years ago I furnished a larger monograph on the same subject but the sad situation in my country made a publication with good reproductions practically impossible. For those who are looking for quotations of literature I have to state that during the war Hungary was hermetically sealed from the outside by the countries of the Entente, and therefore we were unable to secure any medical papers from the outside world. When the great war ended there came the Czech occupation of Pozsony (Pressburg) and during the ten months our mails were delivered only in exceptional cases. All the packages and printed matter, as well as most letters, were retained by the occupying government. Later when we were counseled to leave our university and go to Budapest, the differences in money values made the purchase of publications an impossibility.

A glance at the photographs of my patients will show that after they had been operated on most of them wore a much more cheerful countenance, their hair is combed, their moustaches are waxed, and their desire to look well came back to them after a siege of hopelessness. This little indication of a return of natural vanity signifies that they once more have an interest in life—and this is one of the greatest results of reconstructive operations. Whenever a surgeon intends to perform such an operation he should always think of the result and never forget that it is not enough that he is satisfied with his work, for the patient, who is to carry the result of such an operation with him for life, must also be satisfied. That is why we must never operate unless we know that the patient will not be compelled to regret his confidence in our imaginative ability, our deftness of hand and our operative knowledge.

In plastic operations the first two qualifications are equally important with the knowledge of surgical rules.

IV. Kecskeméti-út. 14.

INCREASED AMOUNT OF URIC ACID IN THE BLOOD IN THE TOXEMIAS OF PREGNANCY *

J. LISLE WILLIAMS, M.D.

CHICAGO

There appear to be few references in the literature concerning the amount of uric acid in the blood of pregnant women, particularly those with symptoms of toxemia. The most definite statement I have found is that by Slemons and Bogert,[1] who have reported the amounts over normal found by them in the blood of two patients with eclampsia and three patients with preeclamptic toxemia. For the sake of clearness, the term "toxemia of pregnancy" is used here to include eclampsia, preeclamptic toxemia, and pernicious vomiting of pregnancy. Herter,[2] Zangemeister,[3] Landsberg,[4] Folin,[5] Farr and Williams,[6] and Losee [7] have reported the blood urea and the total nonprotein nitrogen of the blood normal or slightly increased in women with the toxemias of pregnancy. Losee [6] recently reported the creatinin of the blood of thirteen patients with eclampsia between 1.45 and 3.15 mg. per hundred cubic centimeters. Sikes [8] and Zweifel [8] found the ammonia content of the blood normal. Goldsborough and Ainley [9] and Farr and Williams [6] could not demonstrate impairment of kidney function by the phenolsulphonephthalein test, although it is generally known that albumin is present in the urine with pregnancy complicated by toxic symptoms. Ewing and Wolf,[10] Williams,[11] Losee and Van Slyke,[12] and others have observed variations in the relative amounts of ammonia and urea in the urine of women with the toxemias of pregnancy. Williams [11] believes these variations of diagnostic importance. Murlin [13] regards them merely a result of starvation and depletion of the maternal organism by the fetus, and of questionable significance. Murlin and Bailey [14] found an increased excretion of total purin nitrogen during normal pregnancy.

This summarizes briefly the chemical studies of the blood and urine reported in the literature regarding abnormalities of nitrogen elimination in pregnancy toxemia. After a large amount of uric acid had been found in the blood of a patient with eclampsia, more detailed chemical studies of the blood of patients with

* Aided by the Seymour Coman Fund.

* From the Pathological Laboratory of St. Luke's Hospital.

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14. Murlin, J. R., and Bailey, H. C., Quoted by Murlin, J. R. Footnote 13).

the so-called toxemias of pregnancy were made. The results of the chemical examinations of the blood of twenty-five patients [15] with eclampsia, preeclamptic toxemia or pernicious vomiting of pregnancy demonstrate that the uric acid regularly exceeds the normal in the blood of these patients, whereas the other nonprotein nitrogen constituents usually are not increased.

The twenty-five patients studied are grouped clinically as Group 1, patients with eclampsia; Group 2, those with preeclamptic toxemia; Group 3, those with pernicious vomiting of pregnancy; and for comparison there are the results obtained from the examination of the blood of six pregnant women with no symptoms of such conditions.

TABLE 1.—GROUP 1: ECLAMPSIA

Case	Nonprotein Nitrogen Constituents, Mg. per Hundred C.c. Urea N	Nonprotein N	Uric Acid	Creatinin	Time When Blood Was Taken
1	18.8	35.0	.....	....	1 day before delivery
	20.6	36.0	9.00	3.84	On day of delivery; in coma
2	16.3	37.7	11.70	1.64	During coma
3	17.8	46.8	.....	....	3 days before delivery
4	18.0	39.5	3.50	1.61	Before delivery and convulsions
	18.7	38.0	.....	2.00	1 day later, after convulsions
	17.3	33.5	.....	1.10	3 days after delivery
5	39.7	53.6	11.30	6.40	During coma and convulsions
	20.1	40.9	3.70	2.10	1 week later; marked clinical improvement
Average	17.2	40.1	7.84	2.67	

Eclampsia was diagnosed clinically in all the patients of Group 1. Three of them died, and postmortem examination of one demonstrated changes characteristic of eclampsia. Albumin in large quantities with few or many red blood corpuscles was present in the urine of all, hyaline and granular casts in all but one, and a small amount of sugar in only one.

TABLE 2.—GROUP 2: PREECLAMPSIA TOXEMIA

Case	Nonprotein Nitrogen Constituents, Mg. per Hundred C.c. Urea N	Nonprotein N	Uric Acid	Creatinin	Time When Blood Was Taken
1	11.8	22.9	2.96	1.15	2 days before delivery
2	21.0	47.3	....	....	2 hours before delivery
3	17.2	28.1	4.01	1.10	10 days before delivery
	16.6	28.9	2.44	1.46	8 days after delivery
4	18.8	29.9	2.36	1.65	5 days before delivery
5	11.9	32.1	8.21	1.58	3 days after delivery
	13.3	33.7	5.50	1.77	5 weeks after delivery
	14.2	26.2	4.16	1.13	9 weeks after delivery
6	13.1	35.9	8.41	1.68	12 days before delivery
	9.8	25.0	6.86	1.28	1 day after delivery
	12.6	27.4	3.20	1.25	5 days after delivery
7	11.9	27.2	4.32	1.63	3 days after delivery
8	18.9	31.2	3.82	1.6	1 day before delivery
	21.5	35.8	3.03	1.59	3 days after delivery
9	13.1	33.8	2.80	2.12	16 days before delivery
	24.3	37.3	2.66	....	6 days after delivery
	16.6	33.3	3.02	1.93	6 weeks after delivery
10	15.4	32.5	....	....	2 days before delivery
	13.8	35.4	....	....	5 days after delivery
11	13.1	25.7	1.57	2.03	6 months before delivery
	11.7	25.3	3.77	1.38	8 days before delivery
	14.9	29.6	2.10	1.33	2 days after delivery
12	25.0	45.0	5.2	....	2 days before delivery
13	18.2	28.3	3.3	1.47	5 days before delivery
Average	15.78	31.9	3.98	1.53	

The thirteen women in Group 2 all had symptoms clinically designated as preeclamptic toxemia, and also arterial hypertension and albuminuria; three had only the last mentioned symptoms without toxemia; casts were found in the urine of eleven.

In Group 3 there were seven patients with hyperemesis gravidarum. The blood sugar averaged 0.099 per cent.; the plasma chlorids, 5.91 gm. per liter; and the carbon dioxid combining power of the blood plasma, 54.21 per cent. by volume. The urine of six patients contained a trace or a small amount of albumin; two patients had a few hyaline or granular casts; three, a few red blood corpuscles.

TABLE 3.—GROUP 3: HYPEREMESIS GRAVIDARUM

Case	Nonprotein Nitrogen Constituents, Mg. per Hundred C.c. Urea N	Nonprotein N	Uric Acid	Creatinin	Time When Blood Was Taken
1	12.0	28.8	1.45	1.28	4th month of pregnancy
2	15.9	34.6	3.30	1.76	3 weeks before delivery
	15.7	31.0	3.53	1.67	1 day before delivery
3	29.4	56.7	18.03	7.32	2 days before delivery
4	23.6	46.9	5.22	1.95	1 week before therapeutic abortion
	15.9	28.1	5.21	1.51	1 hour before therapeutic abortion
	15.6	27.9	1.80	1.20	1 week after therapeutic abortion
5	10.8	23.4	2.29	1.39	5th month of pregnancy
6	16.8	28.1	3.39	1.45	1 day before delivery
7	16.4	58.4	....	....	6 days before delivery
Average	17.2	36.4	4.91	2.17	

As controls, the blood of six normal pregnant women was examined. These women were in the fourth, fifth, eighth, nine and tenth (two) months of their pregnancy. Two of them were in labor. The blood sugar, plasma chlorids and the carbon dioxid combining power of the plasma were normal for pregnant women. These results agree with those generally accepted as normal by such investigators as Folin and Denis,[16] Myers, Fine and Lough,[17] Tileston and Comfort,[18] Kast and Wardell,[19] Addis and Watanabe,[20] and Hawk.[21] The blood urea nitrogen of normal persons ranges from 12 to 23 mg. per hundred cubic centimeters. The total nonprotein nitrogen of the blood from 20 to 35; the uric acid from 1.5 to 3, and the creatinin from 0.7 to 1.5. In pregnant women the urea nitrogen of the blood is slightly less than in the nonpregnant, from 5 to 9 mg. per hundred cubic centimeters according to Folin; [5] but others, such as Losee,[7] and Farr and Williams,[6] report the urea nitrogen from 7 to 16 mg. per hundred cubic centimeters, and the total nonprotein nitrogen from 21 to 31.

TABLE 4.—NORMAL PREGNANCY

Case	Nonprotein Nitrogen Constituents, Mg. per Hundred C.c. Urea N	Nonprotein N	Uric Acid	Creatinin	Time When Blood Was Taken
1	20.03	34.16	2.98	1.70	4th month of pregnancy
2	12.15	33.0	1.95	1.40	8th month of pregnancy
3	10.83	21.4	2.38	1.26	9th month of pregnancy
4	12.8	22.9	1.47	1.27	7th month of pregnancy
5	8.1	21.5	1.53	1.41	10th month; in labor
6	12.66	27.15	1.68	1.25	10th month; in labor
Average	12.76	26.68	1.94	1.38	

COMMENT

Of the three patients with eclampsia who died, the uric acid of the blood averaged 10.35 mg. per hundred cubic centimeters; in those who lived, it averaged 7.4

15. These patients were in the obstetric service of Drs. Paddock, Gibson and Cary, or in the gynecologic service of Dr. A. H. Curtis, at St. Luke's Hospital, during the last two years.

16. Folin, Otto, and Denis, W.: The Diagnostic Value of Uric Acid Determinations in the Blood, Arch. Int. Med. **16**: 33-37 (July) 1915.

17. Myers, V. C.; Fine, M. S., and Lough, W. G.: The Significance of Uric Acid, Urea and Creatinin of the Blood in Nephritis, Arch. Int. Med. **17**: 570-583 (April) 1916.

18. Tileston, Wilder, and Comfort, C. W.: The Total Nonprotein Nitrogen and the Urea of the Blood in Health and in Disease as Estimated by Folin's Methods, Arch. Int. Med. **14**: 620-649 (Nov.) 1914.

19. Kast, L., and Wardell, E. L.: Concentration of Urea in Human Blood, Arch. Int. Med. **22**: 581-592 (Nov.) 1918.

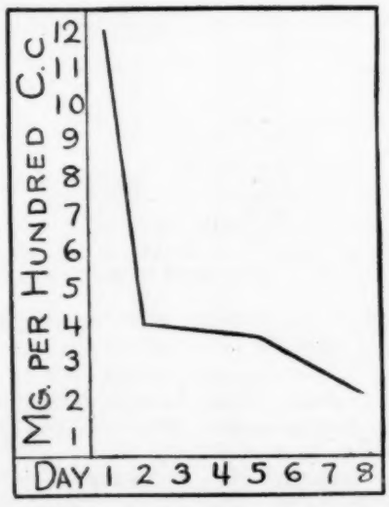
20. Addis, Thomas, and Watanabe, C. K.: The Causes of Variation of the Concentration of Urea in the Blood of Young Healthy Adults, Arch. Int. Med. **19**: 507 (April) 1918.

21. Hawk, P. B.: Physiological Chemistry, Philadelphia, Ed. 6, 1918, pp. 274-275.

mg. when the toxic symptoms were most prominent; and in one shortly after recovery, it was 3.7 mg. With the exception of the blood creatinin in two patients, the other nonprotein nitrogen substances of the blood were not especially increased in amount. The creatinin of the blood of one patient who died was 3.84 mg., and of one recovering, 6.4 mg. per hundred cubic centimeters during the period of convulsions. According to the observations of Losee and Van Slyke,[12] and Farr and Williams,[6] there is a slight increase in the amount of total nonprotein nitrogen in the blood of certain patients with eclampsia. These observations agree with the results mentioned here, and it seems that the increase of the uric acid fraction would account for the larger amount of total nonprotein nitrogen.

This increase of the uric acid in the blood seemed to bear no relationship to the elevation of the blood pressure, other clinical symptoms, labor, or the stage of pregnancy in the patients of Group 1.

The uric acid of the blood of the patients in Group 2 with toxic symptoms varied from 3.3 to 8.41 mg., and averaged 5.34 mg. per hundred cubic centimeters; that of the patients without symptoms from 2.36 to 3.02 mg., and average 2.76 mg. per hundred cubic centimeters. In general, it may be said that those patients in this group who had marked toxic symptoms also had the larger amount of uric acid in the blood. A second chemical examination was made of the blood of four patients of this group who had toxic symptoms after delivery or after marked clinical improvement and the amount of uric acid in the blood ranged from 2.1 to 3.2 mg., with an average of 2.68 mg. per hundred cubic centimeters; in two patients whose symptoms were slightly improved, immediately after delivery the uric acid remained high, 5.5 and 6.86 mg. per hundred cubic centimeters, respectively; but with further improvement, the concentration of uric acid in the blood became normal.



Composite graph of amount of uric acid in the blood after delivery (five patients with eclampsia, preeclamptic toxemia or pernicious vomiting of pregnancy).

Improvement or recovery followed delivery in every patient, but with three the blood pressure remained higher than normal. Two of these three had arterial hypertension for two or more years preceding the existing pregnancy. The patients with severe vomiting had the highest concentration of uric acid in the blood.

Of the seven patients with hyperemesis gravidarum, four improved rapidly under treatment; but with three the vomiting continued, and was so severe that therapeutic abortion was necessary.

Two of these three obviously had hyperemesis gravidarum of the toxic type, the third of the neurotic type. The uric acid of the blood of the two patients with toxic vomiting was 18.03 and 5.22 mg. per hundred cubic centimeters, respectively, while that of the woman with the so-called neurotic vomiting was 3.5 mg. per hundred cubic centimeters. The average amount of uric acid in the blood of the four patients with mild, nervous or physiologic vomiting was 2.38 mg. per hundred cubic centimeters. The uric acid of the blood of one patient with true hyperemesis gravidarum subsequent to delivery and recovery changed from 5.22 to 1.8 mg. per hundred cubic centimeters.

A possible explanation of this marked increase in the uric acid of the blood in eclampsia is contained in a suggestion by Schmorl [22] that cytolysis may be responsible for a toxin producing the pathologic tissue changes of eclampsia. Young [23] thinks that this toxin may arise from the autolysis of cells contained in the multiple infarcts of the placenta. Murlin believes that the toxic symptoms in hyperemesis gravidarum are explained best by an uncontrolled enzyme action in the placenta. Chace [24] finds the headache, nausea and vomiting of chronic nephritis frequently associated with an increased concentration of uric acid and creatinin in the blood.

The presence of uric acid "infarcts" in the kidneys of the new-born has been explained by an increased concentration of uric acid in the fetal urine produced by the destruction of nucleoproteins in the fetal blood. Spiegelberg [25] produced these so-called infarcts experimentally in young dogs by the intravenous injection of uric acid. The amount of uric acid in the infant's urine has been found by Niemann [25] to be markedly increased. The evidence presented here, that the amount of uric acid in the blood of patients with the toxemias of pregnancy is decreased by delivery, suggests the possibility that by absorption the fetal urine may be the source of the increased uric acid in the maternal blood.

CONCLUSIONS

1. In the blood of patients with eclampsia, hyperemesis gravidarum, and with the symptoms of preeclamptic toxemia together with arterial hypertension, the uric acid is markedly increased.

2. Delivery and recovery from the symptoms are associated with a gradual return of the uric acid in the blood to its normal amount.

3. Arterial hypertension in pregnancy unassociated with toxic symptoms is not unaccompanied by uric acid retention.

4. The toxic vomiting of pregnancy is associated with a marked increase of the uric acid in the blood, whereas the nervous or physiologic vomiting is not. It seems possible, therefore, to differentiate these conditions by quantitative estimations of the uric acid of the blood.

St. Luke's Hospital.

22. Schmorl, G.: Zur Lehre von der Eklampsie, Archiv. f. Gynäk. **65**: 504-529, 1902.
23. Young, J.: Aetiology of Eclampsia and Albuminuria, J. Obst. & Gynec. British Empire **26**: 1-28, 1914.
24. Chace, A. F.: The Association of Gastric Symptoms in Nephritis with the Retention of Nitrogenous Waste Products in the Blood, Am. J. M. Sc. **153**: 801-808 (June) 1917.
25. Quoted by Wells, H. G.: Chemical Pathology, Ed. 3, 1918, pp. 633-634.

Practical Achievements of Academic Science.—The extraordinary triumphs of laboratory investigation of disease during the last fifty years are very largely the result of philosophic inquiry. Lister, in his original paper on antiseptics, wrote of "the flood of light thrown by the philosophic researches of M. Pasteur" on the causes of the decomposition of organic matter, researches which led to Lister's great gift to humanity. Bacteriologic science has now contributed so much to medicine that nobody would think of attempting to limit its field of investigation.—*Lancet*, Dec. 11, 1920.

HYPERGLYCORACHIA IN EPIDEMIC ENCEPHALITIS*

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As I have found few definite statements [1] in the current literature on spinal fluid sugar in epidemic encephalitis, I am presenting the brief series of tests made in the pathologic laboratory of the Massachusetts General Hospital during the recent epidemic.

Table 1 gives the findings. Table 2 is shown for comparison.

It will be seen in Table 1 that only one patient gave a normal spinal fluid sugar reading (Case 9, 0.0535 per cent.). The average of the fifteen readings was 0.0760 per cent. The determinations were made from the second to the thirty-fifth day of the illness. There seems to be no definite relation between the duration of the disease and the hyperglycorachia up to the thirty-five days. It has been noted that the severest cases clinically give the highest sugar percentage, and that during an exacerbation the percentage is likely to increase (Case 11). There were too few blood sugar correlations (only six) to permit the expression of a definite opinion, although apparently the blood sugar is not altered from the normal. It is of interest to note that the lowest blood sugar (0.07 per cent.) was from the patient giving the lowest spinal fluid sugar (Case 9, 0.0535 per cent.). The only glycosuria was a "slightest possible trace" in Case 2 at admission, and two subsequent urine examinations were negative. The spinal fluid sugar quantitations on this patient were extremely high, and it was unfortunate that a blood sugar estimation was not obtained. He died on the tenth day of the illness about eleven hours after the last lumbar puncture was performed. No necropsy was permitted.

The ages of the patients ranged from 5 to 54 years. Analysis does not discover any age predilection to a reactionary hyperglycorachia. The cells range from 6 to 150. The fatal Case 2 might lead one to infer that there was some definite relation between pleocytosis and hyperglycorachia; but in the second highest reading, that in Case 11, the cell count was much lower, although here there was an increase of both during an exacerbation of clinical symptoms. The total protein percentage ranged from low normal (0.0219) to moderately high (0.080).[2] In Case 2 and Case 11 it is seen that while the sugar percentage increased in the second determination, the total protein decreased. In Case 6 the protein drop and the sugar drop were synchronous during clinical improvement.

The spinal fluid and blood Wassermann tests were negative. The colloidal gold reactions were quite various, although none in the chronic or acute meningitic zones were recorded. Analysis detects nothing of value in the colloidal test.

With regard to the diagnosis on these patients, I will state that we have tried to be reasonably certain that no doubtful cases were included in the table. Many more patients have been admited to the hospital with a diagnosis of "suspected epidemic encephalitis." Two of them were here diagnosed as having pontile tumors, which diagnoses were confirmed by necropsy. Two others, which were fatal cases, were definitely diagnosed as epidemic encephalitis, one of which came to necropsy and the typical basilar perivascular infiltration was found by microscope. These two patients are not in the table, as unfortunately no sugar quantitations were made on the spinal fluid.

Table 2 is inserted for comparison. Unfortunately no fluids from patients with anterior poliomyelitis have been examined in this laboratory. The percentages given are from those diseases most liable to be confused clinically.

TABLE 1.—LABORATORY FINDINGS IN EPIDEMIC ENCEPHALITIS

				Spinal Fluid					Blood		
Patient	Sex *	Age, Years	Duration, Days	Cells	Protein,† per Cent.	Wassermann Test	Colloidal Gold Test	Sugar, per Cent.	Sugar, per Cent.	Wassermann Test	Urine Sugar
1. B.	♂	37	2	26	0.080	Negative	0011100000	0.0681	....	Negative	..
2. K.	♂	28	4	150	0.050	Negative	0000000000	0.0900	....	Negative	+ 0
		28	9	130	0 0281	Negative	0114100000	0.113	....	Negative	0
3. P.	♂	5	4	6	0.0253	Negative	0122100000	.....	....	.....	0
		5	9	10	0.0266	Negative	0000000000	0.0761	0.09	Negative	0
4. A.	♂	43	7	14	0.042	Negative	0000000000	0.0700	....	Negative	0
5. E.	♀	40	7	18	0.0555	Negative	0122210000	0.0810	....	Negative	..
6. B.	♀	29	7	90	0.047	Negative	0122100000	0.0674	0.10	Negative	0
		29	15	90	0.0219	Negative	0121100000	0.0620	....	Negative	..
7. E.	♂	42		144	0 0634	Negative	0000000000	0.0666	....	Negative	0
8. Y.	♀	26	10	45	0.0449	Negative	3355410000	0.0731	0.10	Negative	0
		26	29	12	.....	Negative	.....	0.0695	....	.....	..
9. D.	♀	10	17	11	0.025	Negative	0122310000	0.0535	0.07	Negative	0
10. T.	♂	43	18	8	0.0294	Negative	0123210000	0.071	....	Negative	0
11. H.	♂	54	21	22	0.0727	Negative	4455553100	0.0847	0.10	Negative	0
		54	35	34	0.0615	Negative	4443210000	0.0937	0.10	Negative	0

* Male is denoted by the symbol ♂ and female by ♀. † Determined by the Denis-Ayer [2] method.

TABLE 2.—SPINAL FLUID SUGAR IN VARIOUS DISEASES, PRESENTED FOR COMPARISON

Diagnosis	High, per Cent.	Low, per Cent.	Average, per Cent.
Normal			
Mestrezat *.....	0.058	0.048	0.0534
Nawratzke †.....	.....	.....	0.046
Our normal (22 patients).....	0.0614	0.0442	0.0528
Syphilis of central nervous system (all forms) (100 patients).....	0.0844‡	0.0355	0.0528
Tuberculous meningitis (9 patients).....	0.0375	0.0212	0.0284
Acute meningitis (4 patients, 4th to 12th day).....	Sugar too low to read		
Epidemic encephalitis (this series).....	0.1130	0.0535	0.0760

* Le liquide céphalo-rachidien, Paris, A. Maloine, 1912.
† Zur Kenntniss der Cerebrospinalflüssigkeit, Ztschr. f. physiol. Chem. 23: 533, 1897.
‡ Only one case was so high. The next lower was 0.0765 per cent.

TECHNIC

The spinal fluid sugar estimations have been made with the Folin-Wu [3] method with very slight modifi-

* From the Neurological Department of the Massachusetts General Hospital.

1. Marie and Mestrezat: Bull. de l'Acad. de méd. **83**: 103 (Feb. 3) 1920. Dopter, C.: Bull. de l'Acad. de méd. **83**: 203 (March 2) 1920. Netter, Block and Dekeuwer: Compt. rend. Soc. de biol., March 20, 1920 abstr. J. Nerv. & Ment. Dis. **53**: 56 (Jan.) 1921.

2. Denis, W., and Ayer, J. B.: Method for Quantitative Determination of Protein in Cerebrospinal Fluid, Arch. Int. Med. **26**: 436 (Oct.) 1920.

3. Folin, Otto, and Wu, H.: J. Biol. Chem. **41**: 367 (March) 1920.

cations. A dextrose solution of 0.005 per cent. is used as a standard. Reading on a 60 mm. Duboscq colorimeter, the standard is set at 30. With some fluids the filtrate is somewhat cloudy. I have compared the readings of the centrifugalized and uncentrifugalized filtrate and found that the difference was not greater than my maximum error which, between 0.040 and 0.075, is 0.004. Below 0.040 and above 0.075 the error is slightly greater, but still very satisfactory for all practical purposes. Four of the fluids from patients with encephalitis were read on two consecutive days, and the difference was within the foregoing limit of error in three of them. The difference in the fourth I attribute to bacterial contamination of the fluid.

CONCLUSIONS

Hyperglycorachia is usually present in epidemic encephalitis. This small series would indicate that there is a definite relation to the intensity of the clinical picture. There seems to be no definite relation to the duration of the disease. There is no evidence of a corresponding glycemia or glycosuria. It appears to be the only test which is characteristic of this condition; and in the absence of a distinctive pleocytosis, total protein content or colloidal gold reaction, it is of value as an additional diagnostic aid and possibly is of prognostic importance.

INFESTATION WITH FILARIA LOA

REPORT OF A CASE OF FILARIA BENEATH THE CONJUNCTIVA AND MICROFILARIAE IN THE PERIPHERAL BLOOD STREAM

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There are on record a number of instances of persons in the United States infested with the parasite *Filaria loa,* possibly nine or ten in all. Some of the records are rather fragmentary. Missionaries returning from the west coast of tropical Africa, where the occurrence of the parasite is endemic, have been the usual hosts of this nematode.

I shall omit relating facts pertaining to the life history of the parasite, its detailed anatomic structure and its geographic distribution, as these may be found in standard textbooks on parasitology.[1]

REPORT OF CASE

March 15, 1918, about 3 p. m., Dr. S. L. Kline brought to my office Mr. J. B., age 32, born in Glasgow, married, and by occupation a purchasing agent, who stated that there was a worm beneath the tissue covering the right eyeball. Two weeks previous to his visit to me he began to have a sharp burning and itching of the eyelids of the right eye which was not relieved by rubbing the eye. The sensation came at irregular intervals, sometimes lasting only for a moment but often persisting for half an hour. While distressing, the discomfort had not been severe enough to keep him awake at night or to interfere with his work. After lasting for three or four days, the soreness had passed over to the other eye. Then for a week the condition had been dormant, but started again the morning of his visit to me, the itching and burning being most pronounced in the region of the internal canthus of the right eye.

When this eye trouble first made its appearance, the patient thought that he might have a foreign body in the eye. He therefore consulted Dr. Kline, who examined the eye carefully but found no evidence of a foreign body. Later thinking that an eyelash might be scratching the eyeball, he examined his own eye in front of a mirror. He found no inverted eyelash, but noticed a peculiar fold of the conjunctiva of the eyeball which he took for stringy mucous secretion. Just before coming to my office he saw something moving on the right eyeball below the cornea and beneath the conjunctiva. He stated that he realized this must be a worm of some kind from its movement and from the fact that it raised its head "as if from surprise," when it was bumped against the cornea (evidently the limbus) and found progress in that direction halted.

On direct examination of the eyes and with the ophthalmoscope, I found nothing definitely pathologic. The conjunctiva of the lids appeared normal. There were a few dilated veins on the bulbar conjunctiva of the right eye, and near the internal canthus there was a small area suggestive of a slight capillary hemorrhage beneath the conjunctiva Nothing resembling a worm was seen, but at this time the patient had a burning pain in the region of the nose, and he felt that the worm had changed its position. I had him wait in my examining room, and in about twenty minutes he called me to say that he felt the worm again in the region of the right eye. The lower lid was promptly everted, and in the fornix I could see a threadlike elevation of the conjunctiva which sinuously changed its position as if from the movement of a worm beneath.

A solution of cocain was quickly instilled in the conjunctival sac, and the fold was grasped with forceps. The conjunctiva was slit with a cataract knife, and I was able easily to pull out a long, whitish, filiform worm which, placed in water, was slightly active. On the supposition that the worm was of the genus *Filaria,* I made blood smears from the fi er, and microfilariae were found in the blood, several extremely active larvae occuring in each droplet of blood.

The following additional history was then obtained from the patient: In the spring of 1906 he left England to work for a trading company in southern Nigeria, and while there he was located on the delta of the river Niger about 50 miles inland. He remained there until the fall of 1909, visiting England once for a month during this period. While in Africa he had in addition to numerous feverish attacks of sickness, attributed to malaria, an edematous swelling of the left hand suffeient to obliterate the knuckles. This condition came on without apparent cause, lasted several days, and then disappeared. While the hand was stiff, it caused him no pain.

In December, 1909, the patient left for Canada by way of England. He was in London, Ontario, for a year, and then moved to Winnipeg, where he was married and remained until June, 1916, when he came to Detroit.

Since leaving Africa he has lost about 20 pounds. He now weighed 130. For three or four winters he had suffered from severe colds and had numerous periods of distressing coughing with fever and night sweats. This caused him to consult a lung specialist a year before, who was unable to elicit evidence of tuberculosis. For the last few months he had had occasional spells of palpitation of the heart at night just after falling asleep, which lasted only a minute or two. During these short attacks he could feel his heart violently beating against his chest-wall, and the pounding was so great that his body and even the bed appeared to shake. He had had no serious illness, however, since childhood.

Physical examination of the patient revealed no other pathologic changes. Urinary findings were of negative import. No chyle was present. Examination of the blood cells and hemoglobin revealed: erythrocytes, 4,304,000 per cubic millimeter; leukocytes, 8,000; hemoglobin, 85 per cent.; color index, 0.9; differential count: polymorphonuclear leukocytes, 54 per cent.; large lymphocytes, 3 per cent.; small lymphocytes, 29 per cent.; eosinophils, 12 per cent.; mast cells, 0 per cent.; transitionals, 2 per cent. Microscopically, the red cells appeared normal. A Wassermann examination of the blood was negative. The worm removed from the eyelid and placed in water was found dead the morning after its removal. It measured 61 by 0.5 mm. The anterior end was conical,

1. Also article by Ward, H. B.: Ocular Parasites, American Encyclopedia of Ophthalmology **12**: 9289.

the posterior slowly tapering and rounded at the extremity. The sheath was studded at irregular intervals with minute bosses. The alimentary canal appeared to be marked by a yellowish coloration extending nearly the entire length of the worm. Details of the reproductive organs were not intensively studied. They were filled with finely granular, ovoid embryos.

These characteristic features of the worm correspond to the descriptions furnished by various textbooks of parasitology of the adult female of *Filaria loa*. This identification was confirmed by Dr. Morris C. Hall, at the time parasitologist with Parke Davis & Co., and again later by Dr. F. G. Novy of the University of Michigan.

Peripheral blood smears were made at different times during the day on various occasions, at 3, 8 and 10 a. m. and 2, 3, 4, 5, 9, and 10 p. m. Microfilariae were found in all smears except those made at 3 and 8 a. m. In size, the microfilariae corresponded to the dimensions given by various textbooks, namely, length, from 140 to 166 microns; width, from 8 to 10.5 microns.

COMMENT

It is now three years since this adult worm was removed from beneath the conjunctiva. The patient has remained under observation during this period. While no other adult parasites have made their appearance, whenever the peripheral blood has been examined the microfilaria has been found. The last examination was made in January of this year. The embryos do not seem to be as numerous as when first demonstrated but usually at least one can be detected in each blood droplet examined. They are at times less motile than at others, but I am not able to conclude that they are losing their vitality.

Since the patient went to Nigeria in the spring of 1906 and remained there until the fall of 1909, it is apparent that the infestation with this parasite is now of from twelve to fifteen years' duration. A similar case is on record in which the infestation with *Filaria loa* lasted fourteen years.[2] It will be interesting to keep this patient under observation, if possible, to see how much longer the infestation, which must be self-limited, will endure.

During the last three years the patient's health has been good. He had influenza when this disease was epidemic. He is still under weight. He has not had palpitation or night sweats, which were previous complaints, and in my opinion it is unlikely that these conditions were in any way dependent on the presence of the parasite. The swelling of the hand, which he describes as having occurred while he was in Nigeria, corresponds to the usual descriptions of Calabar swellings often associated with infestation with this parasite.

As the parasite does not appear to be seriously affecting his health, the patient has not felt that he wanted to submit to experimental therapeutic attempts to get rid of the microfilariae in his blood. According to Ward, various agents, such as atoxyl, thymol, methylene blue, arsenophenylglycin and arsphenamin, have been tried on the embryos with little or no effect. Recently British observers, in subjects with *Filaria bancrofti*, have found that repeated injections of safe doses of sodium, antimonyl tartrate appear to produce a definite dimunition of filarial embryos in the peripheral blood.[3]

From the length of the worm in this case, 61 mm., it is apparent that figures sometimes given describing the length of the parasite are not great enough. Ward, for instance, places the length of the adult female at from 32 to 50 mm. Undoubtedly measurements have often been made of specimens kept in some preserving fluid when shrinkage has taken place. After standing in alcohol for some months, my specimen had shrunk to 45 mm.

2. Laveran, A.: Sur un cas de filariose due a F. loa d'une durée de quatorze années, Bull. soc. path. exot. **9**: 436, 1916.

3. Rogers, L.: Preliminary Report on Intravenous Injections of Antimony in Filariasis, Lancet **2**: 604 (Oct.) 1919.

PREVENTION OF ACUTE ARSPHENAMIN REACTION BY ANTIANAPHYLAXIS AND ATROPIN

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The acute nitritoid or anaphylactoid reaction and the late gastrointestinal upset following the intravenous administration of arsphenamin are familiar to those of the profession whose scope of practice includes this form of medication. By the former term is meant the suffusion of the face, choking, and cardiorespiratory symptoms occurring immediately on injection, and by the latter, persistence of severe vomiting with or without diarrhea, beginning some hours after injection. To those who insist on hospitalization of the patient for from six to twenty-four hours after treatment, the occasional reaction in the average case may be of little significance. For the average practitioner, however, or outpatient clinics where hospitalization is not practical, even a mild reaction may be of considerable annoyance. Both reactions, on the other hand, may form a critical complication in those patients whose idiosyncrasy prevents even the absolutely necessary minimal use of the drug. The method described by Stokes [1] provides a means of dealing with this situation which is simple and applicable to the large majority of cases.

Among various means that have been suggested for the control of the nitritoid or anaphylactoid reaction to intravenous administration of arsphenamin, mention must be made of (1) special care in the preparation of the patient (fasting); (2) caution in alkalization of arsphenamin solutions (to prevent precipitation in the blood stream); (3) epinephrin solution (Milian) [2] in from 5 to 15 minim doses as a means of controlling the reaction after it develops, and (4) epinephrin as a prophylactic (Berman).[3] Our experience confirms the value of the first three. The employment of atropin and the induction of antianaphylaxis, suggested by Stokes, is of the greatest value, not as a routine, but as a means of dealing with the difficult case.

The induction of antianaphylaxis, to which for convenience the term "Besredka technic" is here applied, is accomplished on the service of the section of dermatology and syphilology by dividing the individual dose of arsphenamin into two portions, a small preliminary injection, one tenth of the total amount of the drug being given one hour before the subsequent larger portion. Atropin when used alone is given hypodermically in $\frac{1}{50}$ grain doses, twenty minutes before the intravenous administration of the arsphenamin. Strickler [4]

1. Stokes, J. H.: Atropin and Induced Anaphylaxis as a Protection Against Acute Arsphenamin Reactions, J. A. M. A. **72**: 241-243 (Jan. 25) 1919.

2. Milian: Les intolerants du 606, Bull. Soc. franç. de dermat. et syph. **23**: 520-549, 1912.

3. Berman, L.: The Nitritoid Crises After Arsphenamin Injections, Arch. Int. Med. **22**: 217-223 (Aug.) 1918.

4. Strickler, A. A.: Reactions Following Intravenous Administration of Arsphenamin, New York M. J. 498-499 (Oct. 2) 1920.

has stated that the latter method is not effective; but it should be noted that he employed 1/75 grain doses, whereas Stokes in his description of the method called attention to the need for 1/50 grain doses, and in the ineffectiveness of 1/75 grain. Occasional patients respond to the smaller doses, and not all are protected by 1/50 grain, which is the highest dose that we have given.

In some patients who are apparently highly reactive to arsphenamin, a combination of the two methods may completely inhibit a reaction when either method alone has failed to produce the desired effect. In combining the two methods, a small "vaccinating portion" of the arsphenamin solution (one-tenth the total dose) is injected intravenously; twenty minutes later 1/50 grain of atropin is given hypodermically, and twenty minutes after the administration of the atropin the remaining or larger portion of the arsphenamin solution is injected. By the use of these methods, we have practically eliminated the reaction in the treatment of susceptible patients, and patients who have been reluctant to submit to further injections have been induced to continue their treatment.

The cause of the nitritoid reaction has been a matter for much study and conflicting opinion. The true relation to anaphylaxis of the acute of nitritoid reaction and the later gastro-intestinal reaction produced by arsphenamin has not been established. Support for the belief that some such relation exists rests on more than mere clinical analogies. The supporters [5] of the older humeral, or chemical, theory of anaphylaxis contend that the anaphylactic reaction is an intoxication brought about by the toxic substances elaborated in the blood stream of the sensitized animal as a result of interaction between antigen and antibody. The latter supposedly is of the nature of an enzyme, the poison being produced by the digestive action of the proteolytic enzyme (antibody) on the injected antigen. According to this theory, a preliminary or sensitizing injection is necessary. Swift [6] early showed with respect to arsphenamin that such preliminary injection might not be necessary. Swift did show, however, that guinea-pigs could be passively sensitized to a mixture of guinea-pig serum and arsphenamin, and would on subsequent injection develop a true anaphylactic response.

By the newer conception of the physical mechanism of anaphylactic shock as developed in the American literature, especially by Jobling and Petersen,[7] and by Novy and De Kruif,[8] it is contended that the proteins of the serum of the sensitized animal, rather than the injected antigen, are the source of the anaphylatoxin. In other words, the anaphylactic shock is produced by a change in dispersion of the colloids of the blood stream. The production of anaphylatoxin can, therefore, occur following the injection of colloidal suspensions, such as agar, or of inert substances, such as kaolin. Jobling and Petersen and Novy and De Kruif suggest that the reaction is analogous to the catalytic change of fibrinogin into fibrin in coagulation. The development of this theory has, of course, eliminated the objection to Swift's explanation.

MacKee,[9] Stokes, and others have pointed out that the reaction observed following intravenous injection of arsphenamin in acid solution resembles the nitritoid crisis and anaphylactic shock and is proportional in severity to the rate of administration, that is, to the rate of precipitation of the drug in the blood stream. Danysz [10] has maintained that the arsphenamin solution is essentially collodial and that even when properly alkalinized it is precipitated on its injection by the constituents of the blood plasma, and then formed again into soluble organic derivatives. The rate of this precipitation is dependent to some extent on the alkalinity of the solution and on the peculiarities of the blood plasma.

Hirano [11] suggests that the reaction may occur from peculiarities of the individual blood plasma. He conceived the idea that there might be some intimate relation between arsphenamin and the suprarenal system in the development of anaphylactic shock because of the fact that epinephrin had been employed successfully in the treatment of this reaction. Hirano observed also that the development of a nitritoid crisis was successfully prevented by the administration of a dose of arsphenamin in two portions. He was able to ascertain by experiments in rabbits that there was some change in the chromaffin substance of the suprarenal glands following the administration of arsphenamin. The inability to detect epinephrin in the blood plasma in appreciable amounts makes it debatable whether or not the reaction is due to decrease in epinephrin in the blood of sensitized patients. It is conceivable, however, that a change of this nature in the blood plasma may have some effect on the precipitation of the colloidal solution of properly alkalinized arsphenamin solution.

Schamberg, Kolmer, Raiziss, and Weiss,[12] after a careful study of reactions to arsphenamin, concluded that the acute reactions to arsphenamin are due, at least in part, to traces of an unidentified impurity in the drug which for purposes of convenience they designate as substance "X." They [13] fail to support the observations of Danysz on the precipitation of properly alkalinized solutions (disodium salt) in the blood stream.

Since certain sensitized persons react severely when other persons who receive the intravenous injection from the same solution prepared at the same time from the same lot of the drug, or even from the same ampule, remain unaffected, it is not improbable that the reaction involves an anaphylactic element and possibly the effect of an impurity in the drug. The protection of the patient by measures known to afford protection against anaphylactic shock, as here described, supports the theory of anaphylaxis.

In an examination of the records of the Section on Dermatology and Syphilology with reference to arsphenamin reactions, thirty-six cases were found in which the recurrence of arsphenamin reactions, of both

5. Vaughan, V. C.: The Phenomena of Infection, J. A. M. A. **62**: 583-589 (Feb. 21) 1914.

6. Swift, H. F.: Anaphylaxis to Salvarsan, J. A. M. A. **59**: 1236-1240, 1912.

7. Jobling, J. W., and Petersen, W.: The Mechanism of Anaphylatoxin Formation. Studies on Ferment Action, J. Exper. Med. **20**: 37-51, 1914.

8. Novy, F. G., and DeKruif, P. H.: Anaphylatoxin and Anaphylaxis, J. A. M. A. **68**: 1524-1528 (May 26) 1917; IX, Specific Aanaphylactic Shock, J. Infect. Dis. **20**: 776-832 (June) 1917.

9. MacKee, G. M.: A Comparison of the Results Obtained by the Intravenous Administration of Acid and Alkaline Solutions of Salvarsan, Preliminary Report, New York M. J. **94**: 825-832, 1911; A Study of the Blood After Intravenous Injections of Salvarsan, J. Cutan. Dis. **30**: 199-206, 1912.

10. Danysz, J.: Les propriétés physicochimiques des produits du groupe des arsenobenzenes: leurs transformations dans l'organisme (prémier mémoir), Ann. de l'Inst. Pasteur. **21**: 114-137, 1917.

11. Hirano, N.: Experimental Studies on Investigation of Nature of Anaphylactoid Caused by Repeated Intravenous Injection of Salvarsan, Kitasato Arch. Exper. Med. **3**: 1 (April) 1919.

12. Schamberg, J. F.; Kolmer, J. A.; Raiziss, G. W., and Weiss, C.: Laboratory and Clinical Studies Bearing on the Causes of the Reactions Following Intravenous Injections of Arsphenamin and Neo-arsphenamin, Arch. Dermat. and Syph. **1**: 235-255 (March) 1920.

13. Schamberg, J. F.; Tokuda, K., and Kolmer, J. A.: A Study of Arsphenamin-Serum Precipitates and Their Relation to Clinical Reactions, Arch. Dermat. and Syph. **3**: 263-271 (March) 1921.

the nitritoid and gastro-intestinal types, was so persistent that it was impossible to ascribe it to incidental or temporary fluctuations in the technic. Our technic of administration is quite constant and conforms in general to Public Health Service standards. The rate of administration of 1 decigram for each minute and the degree of dilution (20 c.c. for each decigram) has been found by prolonged experience to be entirely safe and reactionless for the majority of patients. In general, the patients have been under hospital observation for from six to twenty-four hours following each injection.

Of the thirty-six patients whose complete records of preoperative preparation and postoperative reactions are available, twenty-one evidenced their idiosyncrasy by repeated nitritoid reactions to successive injections. Fifteen patients had repeated attacks of severe nausea and vomiting from two to six hours after each injection. Since the preparation of the patient and the brand of the drug were identical for all patients, it seems reasonable to assume that both types of reaction were the result of personal idiosyncrasies to arsphenamin. A reaction to the first injection did not once occur. The average occurrence of the first reaction of the series was with the fifth injection, which thus suggests that the cumulative effect of repeated injections is able to produce idiosyncrasy in certain cases. That this acquired idiosyncrasy persists for some time is shown by the fact that on resuming treatment following a rest period of several months the patients usually exhibited the same tendency to react to the arsphenamin.

It is interesting here to recall the observation of Stuart and Maynard [14] on a cutaneous test for arsphenamin sensitization in patients who have developed toxic eruptions following treatment with the drug. These authors noted that the sensitiveness finally disappeared (thirty-six weeks in their case).

The observations here described seem to show that repeated anaphylactoid shocks and late gastro-intestinal reactions are often encountered in the same patient and that both types of reaction are controlled by the use of atropin or by the Besredka technic. The late gastro-intestinal reaction may bear a closer relation to the nitritoid reaction than at first appears. The combination of acute nitritoid crisis and late gastro-intestinal reaction was observed in eight patients in this series. The case herewith reported is an example of such a combination.

REPORT OF CASES

Case 1 (321202).—Miss S., a robust woman, aged 27, was under treatment because of a positive serum Wassermann reaction on the blood. Her only general complaint was chronic attacks of mild appendicitis. The patient was receiving intravenous injections of arsphenamin (arsenobenzol) in doses of 0.3, 0.4, and 0.4 gm. at weekly intervals. Immediately following the fourth injection (the previous doses had been 0.3, 0.4, and 0.4 gm.) she developed typical acute nitritoid crisis. This reaction was readily controlled by the subcutaneous administration of 10 minims of 1:1,000 epinephrin solution. One week later she exhibited the same reaction following the treatment. The sixth injection was given in two portions (Besredka technic). Reaction did not occur. The patient was then placed on a three months' rest period, with interim inunction treatment. On resuming the arsphenamin treatment, she showed no untoward effect from the first two injections. Four hours after the third injection, however, a severe gastro-intestinal disturbance developed, consisting of persistent nausea and vomiting for several hours. She reacted similarly a week later. Following the next (fifth) intravenous injection, she experienced both a nitritoid crisis and subsequent nausea and vomiting. For the last treatment, arsphenamin was administered in two portions. Reaction did not occur.

Another case is reported which illustrates the relation between the gastro-intestinal reaction and the nitritoid crisis, as well as the dosage of atropin indicated.

Case 2 (203427).—Miss P., a well developed girl, aged 21, complained of stiffness of the extremities. She had an evident syphilitic infection with a positive blood Wassermann reaction. She received five injections of arsphenamin (arsenobenzol) at weekly intervals, the dosage ranging from 0.2 to 0.4 gm. No reaction resulted during the course. Four months later following each of three consecutive weekly injections, the patient experienced severe nausea and vomiting. With the next two injections, an acute nitritoid crisis and a late gastro-intestinal reaction occurred. On the resumption of arsphenamin injections, three months later, 1/150 grain of atropin was administered hypodermically twenty minutes before injection. There was no reaction. Nausea and vomiting followed the arsphenamin injection a week later, however, even though the preliminary injection of atropin (1/150 grain) had been given, and 1/150 grain of atropin given hypodermically before the next injection failed to prevent an acute nitritoid crisis and late gastro-intestinal reaction. One-fiftieth grain of atropin was given before the next and last injection. No reaction resulted.

In order to show how treatment may be continued in a highly susceptible patient by the use of atropin, or the Besredka technic, or by a combination of both, another case is cited:

Case 3 (261250).—Mr. M., a large, healthy appearing man, aged 31, was under treatment for central nervous system syphilis. He experienced no reaction to the first four injections of arsphenamin at weekly intervals. Following the fifth and sixth injections, however, acute nitritoid crises occurred. After three months' rest with interim mercurialization, reactions did not occur following the first two arsphenamin injections, but an acute nitritoid crisis followed the third injection. By the use of the Besredka technic, reaction did not develop following four subsequent injections of arsphenamin. With the sixth injection, however, a mild reaction resulted, even though the injection was given in two portions. Following another rest period of four months, the patient still presented the same idiosyncrasy to arsphenamin as shown by a severe nitritoid reaction after the first injection. One-fiftieth grain of atropin failed entirely to prevent reaction to the second injection, which was followed by slight flush. A combination of the Besredka technic and atropin (1/50 grain), however, prevented any reaction to four subsequent arsphenamin injections in this course and to four similar injections during a course of treatment three months later.

SUMMARY

1. The exact nature of nitritoid and gastro-intestinal reactions to arsphenamin is undetermined. It seems not improbable that a variety of causes may act to produce a single syndrome of which the acute reaction on the table, and in certain cases, the late gastro-intestinal reaction may be phases of the same phenomena.

2. In the group of cases herein reported, repeated nitritoid crises, associated with repeated gastro-intestinal reaction, persisted regardless of any controllable factor in the technic.

3. Repeated uncontrollable acute reactions are interpreted as personal idiosyncrasies of the patients to the drug.

4. The observation of Stokes on the value of atropin and of induced antianaphylaxis (Besredka technic) in the control of a persistent tendency to acute nitritoid crisis is confirmed.

5. It has been further found that a tendency to repeated late gastro-intestinal reaction can also be con-

14. Stuart, H. C., and Maynard, E. P.: Hypersensitiveness to Arsphenamin Following Exfoliative Dermatitis, Arch. Int. Med. **26**: 511-520 (Nov.) 1920.

trolled in a large number of cases by either method alone, or by a combination of the two methods.

6. Atropin is sometimes effective in doses less than 1/50 grain. It may fail entirely to affect reaction even in doses of 1/50 grain.

7. A combination of the use of atropin and the induction of antianaphylaxis by dividing the dose of arsphenamin is more effective than the employment of either method alone.

8. A combination of the two methods may make possible the continuance of arsphenamin treatment in patients in whom repeated severe reaction would otherwise force its abandonment.

LARYNGEAL DIPHTHERIA

REVIEW OF FIVE HUNDRED AND FIFTEEN CASES IN WHICH INTUBATION WAS PERFORMED *

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Within the entire field of pediatrics it would be difficult to find a disease that presents more interesting problems than laryngeal diphtheria. Moreover, there is scarcely anything that can happen in the life of a child which is so likely to be attended with disastrous results as an attack of this type of infection.

O'Dwyer [1] has told us that in the New York Foundling Asylum, previous to the days of intubation, the mortality was practically 100 per cent. in laryngeal diphtheria. But because of O'Dwyer's ingenuity in devising the instruments now in use, the sacrifice is no longer so great. Nevertheless, the loss of life from this variety of diphtheria is high under the best of circumstances, and excessive, as a rule, under ordinary conditions.

There are many reasons why such a large proportion of these cases terminate fatally, and some of our medical schools and some of our textbooks must share the blame. For there are few medical students who ever receive any instruction in the art of intubation, and many textbooks would have one believe that it is a very simple [2] matter to insert a tube in the larynx. Even medical societies sometimes recognize the "simplicity" of the operation in making up fee tables by expressing the belief that it is worth at least twice as much to do a tracheotomy as it is to perform an intubation.

As a matter of fact, there is probably no more difficult operation in surgery than an intubation properly performed. And whereas almost any one possessing a little surgical skill can make an incision in the neck and insert a tracheotomy tube, very few will succeed in their endeavors to intubate the larynx unless some experience has been acquired in this character of work.

In many contagious disease hospitals where the interns constantly come and go, we will find the mortality in intubated cases often ranging from 50 to 70 per cent.; and we find it quite customary to make reference to the percentage of recoveries rather than to state the mortality percentage, which may seem shocking. In such hospitals, physicians are attempting to gain knowledge and experience. Frequently they are trying to accomplish something which they have never before undertaken. Usually the intern has not even attempted intubation on a cadaver, which, though far different from performing the operation in life, is nevertheless of considerable value.

Perhaps a patient is brought into the hospital at the brink of death from asphyxiation. All that is necessary to save a life is the insertion of a tube in the larynx. The textbook has at least implied that this is not difficult to do, but the young physician fails in his efforts; yet he will not admit defeat, which would be indicated by resorting to tracheotomy. He refuses to give up the task he has set himself to do, and eventually, perhaps, lodges the tube in the esophagus, with a wavering conviction that the patient is properly intubated though the life departs. Experiences of such a nature are heartrending, and yet there are probably few who have learned to intubate who did not at some early stage in their career encounter an instance of such a character.

Although the general consensus of opinion appears to be that extubation is considerably more difficult than intubation, still it has always seemed to me that the reverse is true. But even disregarding the ease or intricacies of either operation, I am convinced that the proper way for one to learn intubation is to learn first to extubate. There are many advantages in following such a procedure, and when the work of a beginner is entrusted to me, no attempts at intubation are permitted until at least ten extubations have been successfully accomplished. The following factors are prominent in the adoption of this method: (1) Under ordinary conditions the intubated patient is in no immediate danger when extubation is attempted; (2) there is no necessity for hurry; (3) the beginner gains a tactile familiarity with the anatomic surroundings of the larynx, at his leisure, as well as with the general technic of the operation; (4) a marked degree of confidence, which is very essential, is also acquired.

When to and when not to intubate in laryngeal diphtheria is a matter which must depend frequently on the patient's environment. There are many patients whom one might intubate in the home who would not be intubated if in a suitable hospital under the constant observation of attendants specially trained for this class of patients. Ordinarily, however, the home is no place for an intubated patient to remain unless there is a well qualified nurse in constant attendance, and a physician experienced in intubative work ever on the premises.

Some of the remarkable results reported for intubated patients in private practice must be totally beyond the comprehension of any one possessing an extensive hospital experience in this type of disease. When one hears of a mortality of but 14 per cent.[3] for tube patients treated in their homes, and then on the other hand learns that such an institution as the Willard Parker Hospital in New York has had an average mortality of 57.87 per cent. (1901-1905) for 588 cases,[4] one can scarcely help but wonder whether a large number of the recoveries in the home did not occur in spite of intubation and not because of it. At the Philadelphia Municipal Contagious Disease Hospital, the average yearly mortality from 1897 to

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* Read before the Chicago Pediatric Society, March 22, 1921.

1. O'Dwyer, Joseph: Intubation of the Larynx, New York M. Rec., Sept. 10, 1887, p. 318. Nothnagel's Encyclopedia, Practical Medicine, Diphtheria, Philadelphia, W. B. Saunders Company, 1902, p. 170.
2. Ingals, E. F.: Diseases of the Chest, Nose and Throat, New York, William Wood & Co., 1900, p. 463.
3. Cartin, H. J.: Intubation of the Larynx, J. A. M. A. **69**: 460 (Aug. 11) 1917.
4. Fischer, L.: Diseases of Infancy and Childhood, Philadelphia, F. A. Davis Company, Ed. 3, 1910, p. 579.

1903 was 59.23 per cent., and at the Boston City Hospital from 1895 to 1903 it averaged 59.54 per cent., though in the year last named, for 139 cases it was only 26.62 per cent.

Having made some reference to results obtained in other cities in the treatment of laryngeal diphtheria, I will now call attention to a few of our accomplishments at the Chicago Municipal Contagious Disease Hospital. When first becoming closely associated with this institution in January, 1919, I found the mortality rate for intubated patients[5] (121) during the preceding year to be 50.4 per cent. Although this figure was not excessive by comparison with similar institutions, it did seem far too high in view of the excellent hospital equipment at our disposal, and because we were fortunate in having exceptionally able resident physicians whose positions were more or less permanent. The nurses, too, were most competent—a very important factor. Consequently, certain regulations and changes were inaugurated in the manner of caring for this type of diphtheria, with the result that our mortality figure at the close of the year 1919 had been reduced by 35.8 per cent., or to 32.32 per cent. for 189 cases. Continuing with our same methods of procedure, we reduced the mortality 51.7 per cent. more in 1920, thus making a total cut of 69 per cent. under the 1918 figure. Our mortality then for the year 1920 was 15.6 per cent. for 205 cases.[6]

In addition to the 205 intubated patients in 1920, there were also forty-two other laryngeal patients sent to the hospital for intubation, but in whom no intubation was done. However, the operation might have been justifiable, and would, in fact, having been advisable, had these patients not been under the constant scrutiny of experienced nurses and in an institution where intubation could be performed at a moment's notice if the necessity arose.

Of the forty-two patients in whose cases no intubation was resorted to, all recovered save two. In both of the latter there was a pharyngeal and nasal diphtheria as well as a laryngeal, and in both cases death was due to an acute nephritis. The average dose of antitoxin for these nonintubated patients was 22,000 units. In no instance was there a complicating bronchopneumonia.

Our policy in regard to intubation is never to intubate if it can be avoided with safety to the patient. Nevertheless, the only proper course was followed in sending the forty-two patients mentioned to the hospital, for no one could foretell whether intubation might not become mandatory at any moment.

All laryngeal patients are received in a special room at the Chicago Municipal Contagious Disease Hospital, and are again transferred out of this room to cubicles as rapidly as possible following the conviction that the likelihood or necessity for intubation is no longer present. By the adoption of this plan, crossed infections[7] have become a great rarity in the intubation room, and the number of patients to keep under constant observation is held at a minimum.

Our intubation room is about 40 feet long and 14 feet wide, with an adjoining small room for the special isolation of certain patients. The door of the latter room is fitted with glass so that any isolated patient is always within full view.

5. No acute diphtheria patients were admitted to the New Municipal Contagious Disease Hospital until March 17, 1918.
6. Bulletin, Dept. Health, Chicago, Feb. 19, 1921.
7. Hoyne, A. L.: Crossed Infections and Methods for Prevention, Mod. Hosp. **13**: 396 (Nov.) 1919.

The main room has glass for the full length of two sides so that it is bright and airy. On one of these sides are outside windows; on the other the windows look on a passageway to which parents have access from an outside door. On account of this construction, visitors can come in to see these patients through the glass without in any way being exposed to infection. And in order thoroughly to guard these cases, there is an emergency bell system, so that by pressing a button bells ring in all portions of all the hospital buildings, and every physician on duty runs at once to the intubation room. The first physician to arrive takes care of the patient for whom the signal was given. Whether a tube has been coughed out and another intubation demanded, or whether it has become blocked and extubation and reintubation are necessary, the physician who first responded to the call is capable of handling the situation.

TABLE 1.—COMPARISONS IN DIPHTHERIA MORTALITY

Year	Admitted	Died	Died Within 24 Hours	Mortality Total, per Cent.	Mortality Exclusive 24-Hr. Deaths, per Cent.	Mortality Exclusive Intubated Cases, per Cent.	Mortality Exclusive Both Intubated and 24-Hr. Cases, per Cent.
1919	1,597	154	63	9.66	5.7	6.6	3.8
1920	1,552	119	44	7.66	4.9	6.4	3.3

The ratio of tube cases to total diphtheria patients in hospital practice is usually said to average from 10 to 30 per cent. At the Municipal Hospital, Chicago, it was 11 per cent. in 1919 and 13 per cent. in 1920.

Our total diphtheria admissions for 1919, exclusive of diphtheria carriers, of which there were 175, with no deaths, were 1,597, and for 1920 the number was 1,552, exclusive of carriers.

In connection with the foregoing, it may be of interest, perhaps, to note some comparisons in our diphtheria mortality, as shown in Table 1, which, as previously indicated, does not include diphtheria carriers. In this table the "twenty-four hour deaths" refer to patients dying within twenty-four hours of admission to the hospital. These are usually patients who are in a moribund state at the time of removal from their homes and are rushed to the hospital in a last desperate effort to save or prolong life.

TABLE 2.—MORTALITY AMONG INTUBATED PATIENTS

Year	Admissions	Died	Died Within 24 Hours of Admission	Mortality Total, per Cent.	Mortality Exclusive of 24-Hr. Deaths, per Cent.
1918	121	61	21	50.4	33.00
1919	189	61	23	32.32	20.10
1920	205	32	11	15.6	11.34

A further detailed illustration of the results accomplished at the Chicago Municipal Contagious Disease Hospital in the treatment of diphtheria is given in the tabulation for the intubated cases alone (Table 2). Of the total (515) intubated patients, 55 per cent. were males, and of the total deaths (154) 53 per cent. were of males. These figures make it apparent that sex is not a very important factor either in susceptibility or in prognosis. All the patients referred to in my tables were white, and in this connection it may be mentioned that among 800 or 900 cases of laryngeal diphtheria which have come under my observation, there has not been one single instance of a colored child requiring

intubation. However, diphtheria appears to be a disease to which the colored race [8] is relatively immune.

Two additional tables may be of interest in setting forth some statistics relating to the recoveries among intubated patients on the one hand, and to those cases which terminated fatally, on the other. In Tables 3 and 4, it will be noted that the division of sexes varies somewhat from year to year, but with the males usually predominating. In respect to age, we find the percentage of patients under 5 years fairly constant, and that cases under 1 year are exceptional, as might be expected. The chief danger period is, in fact, from the second to the fifth year, at which time the greatest susceptibility to diphtheria exists. The youngest patient in the entire series was 4 months, and the eldest 52 years, of age. It will also be observed that there were no deaths among patients over 10 years of age.

Among both the recoveries and deaths, there were a few instances in which no positive culture for the Klebs-Loeffler bacillus was obtained, although the clinical picture of laryngeal diphtheria was present.

classified under the year in which they were discharged. For example, the patient given in the year 1918, who was intubated eighty times, entered the hospital in the latter part of December of that year, but received nearly all of his treatment during the year 1919.

Aside from the use of antitoxin and necessary laxatives, the intubated patients at the Chicago Municipal Contagious Disease Hospital receive little in the way of medicinal treatment, except when a complicating bronchopneumonia exists. Then great reliance is placed on the use of camphor in oil, as a stimulant, and the open air treatment. The much heralded strychnin [8] is almost never used; whisky not at all, and sedatives but rarely. Nor is the steam tent employed. Aseptic nursing methods are strictly adhered to, and a separate gown is always worn for handling each individual patient. Furthermore, we regard it as important to have a bottle of aromatic spirit of ammonia at hand, where there are intubated cases, as it is always to have a tracheotomy outfit ready for use if the emergency arises.

The chief reasons for our success in treating intubated patients at the Municipal Contagious Disease

TABLE 3.—RECOVERIES AMONG INTUBATED PATIENTS

Year	Totals	Male, per Cent.	Female, per Cent.	5 Years and Under, per Cent.	3 Years and Under, per Cent.	1 Year and Under, per Cent.	5-10 Years, per Cent.	Over 10 Years, per Cent.	Number With Negative Culture	Average Dose of Antitoxin	Average Number of Intubations	Average Time of First Extubation in Days	Percentage With Bronchopneumonia on Admission	Percentage With Other Types of Diphtheria	Greatest Number Intubations for One Patient	Largest Number Autoextubations for One Patient
1918	60	68	32	73	43	1.6	27	0	5	32,480	3.8	3.9	8	31	80	65
1919	128	53	47	72	29	0.7	26.5	1.5	3	27,750	1.5	4.33	9	63	14	11
1920	173	53	47	77	46	2.0	22	1	6	24,900	2.4	4.0	2	55	82	28

TABLE 4.—DEATHS AMONG INTUBATED PATIENTS

Year	Totals	Male, per Cent.	Female, per Cent.	5 Years and Under, per Cent.	3 Years and Under, per Cent.	1 Year and Under, per Cent.	5-10 Years, per Cent.	Over 10 Years, per Cent.	Number With Negative Culture	Average Dose of Antitoxin	Average Number of Intubations	Percentage With Bronchopneumonia on Admission	Percentage With Other Types of Diphtheria	Greatest Number Intubations for One Patient	Largest Number Autoextubations for One Patient
1918	61	65	35	97	69	8	3	0	2	29,390	3.33	34	27	27	25
1919	61	40	60	87	67	11	13	0	8	28,900	4.0	39	49	58	46
1920	32	53	47	85	56	9	15	0	1	29,600	3.2	43	65	22	17

Laryngeal diphtheria is the one type of disease in which the general practitioner is most inclined to give massive doses of antitoxin, and yet in cases in which the membrane is confined to the larynx such treatment is seldom required. These patients do not suffer extensively from a toxemia. The ordinary complications of diphtheria, such as the various forms of paralysis and nephritis, are not often encountered when the membrane is limited to the larynx. When death ensues, it is almost invariably due either to asphyxiation, as a result of mechanical obstruction by the membrane, or to a complicating bronchopneumonia. From 15,000 to 20,000 units is usually a sufficiently large dose of antitoxin for cases in which the larynx alone is involved. If there are other sites of infection also, as the tonsils or nasopharynx, a considerably larger amount of antitoxin may be demanded.

The average doses given in Tables 3 and 4 are based on all antitoxin which the patients received both before and after admission to the hospital. However, as the information regarding previous treatment was not complete in every instance, it is possible that the averages given for dosage are only approximately correct.

All cases tabulated are listed according to the year in which the patients were admitted, and not necessarily

8. Hoyne, A. L.: A Study in Diphtheria Mortality, with Comments on Treatment, Arch. Pediat. **35**: 513 (Sept.) 1918.

Hospital are that the resident physicians hold permanent positions and that the nurses are well trained in the duties they have to perform. A change in resident physicians is almost certain to foretell a higher mortality rate.

CONCLUSION

The following factors may be summarized as having been contributory to the excellent results secured in this series of hospital cases:

1. Permanence of resident physicians.
2. Specially trained nurses, one of whom always has the patients under constant observation.
3. Emergency bell system.
4. An interval of four or five days before the tube is removed after intubation. This has reduced the number of reintubations necessary.
5. Thorough sterilization of instruments, thus lessening to some degree, at least, complicating bronchopneumonias.
6. Thorough cleansing of hands before and after each operation, a simple precaution, which, nevertheless, is often neglected in dealing with intubated patients.
7. The transfer of patients from the tube room as soon as this can be done with safety, thus lessening the chance of crossed infections.

25 East Washington Street.

Special Article

SEVEN YEARS OF NATIONAL HEALTH INSURANCE IN ENGLAND

A RETROSPECT

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[NOTE.—*This article is printed without modifications in either diction or spelling. The author uses the word "doctor" where we would usually use "physician"; this is because in England "doctor" means doctor of medicine. There they do not have osteopaths, naturopaths, chiropractors and various other paths and faddists assuming the title of "doctor." For "surgery" we would say "office." Statements of fees, allowances, etc., are left in terms of English money, as originally written. The equivalents of these probably are known by all; however, in ordinary times they are:* 1 *penny* (*d*) = 2 *cents;* 1 *shilling* (*s*) = 12*d or* 24 *cents;* 1 *pound* (£) = 20*s or about* $4.86. *Editorial Comment will be found in the Editorial Department.*—ED.]

Recent visitors from the United States have made me aware that great interest has been shown there in the subject of National Health Insurance, and also that a good deal of the information about it so industriously supplied to the American public and medical profession is not above suspicion as to its reliability.

When the editor asked me to put on record my views, based on a close acquaintance with the movement in this country, I felt that I ought to do so, partly because the British Medical Association would wish me to do anything in my power to assist the American Medical Association, and partly because the requests for information from your side have become somewhat frequent.

Before touching on the effects of the National Health Insurance Act of 1911 and its successors, it may be helpful to say something first about my own competence to deal with the subject, and secondly about the state of medical practice in this country before the operation of the Act.

Before 1908, I was for sixteen years in practice in a thoroughly and almost exclusively industrial town on Tyneside, and 90 per cent. of my patients were people who are now insured persons or dependent on them. For fifteen years before leaving general practice I had taken an active interest in the organization of our profession, particularly as carried out by the British Medical Association, and had an inside knowledge of the contract practice system by means of which so many of the persons now insured then obtained their medical attendance, taking an active part in fighting the evils that were inseparable from that system. I became Deputy Medical Secretary of the British Medical Association in 1908, serving under Dr. J. Smith Whitaker until 1912, when I succeeded him as Medical Secretary on his becoming the first medical member of the National Health Insurance Commission—the body which administered National Health Insurance until it was merged, in 1918, in the Ministry of Health. I mention these personal details in order to show that though I have never been engaged in health insurance practice I have first-hand knowledge of industrial and contract practice, and have been since 1908 in a position second to none for focusing the views of the organized doctors in this country.

CONTRACT PRACTICE THE FORERUNNER OF NATIONAL HEALTH INSURANCE

For many years, doctors in industrial and agricultural areas have recognized that there were very considerable sections of the public who would never receive (or at any rate would never pay for) their medical attendance unless some arrangement were made on a contract basis. There are very few doctors who do not think that the *ideal* arrangement is for the patient to get his attendance from the doctor of his choice and pay for it by fees varying in amount according to the status of the doctor or the means of the patient, or the custom of the district. You in America may be in a position to do this; and if so, our contract practice arrangements and our insurance act will only have a mild historical interest for you. But we, at any rate, found many years ago that a large section of the public could not pay doctors' bills without the exercise of a rigid thrift which is beyond the powers of the average individual, either in the working class or in any other class. For the destitute we had (and still have) our Poor Law system. But the people to whom I refer were not paupers, and the great bulk of them did not want charity. They wanted to pay their way. The problem was how to arrange for this. Until 1912 the problem was not dealt with nationally, nor were the various local arrangements coordinated, except in a very partial way by the friendly societies, to which I shall refer presently. Many doctors had their own "private clubs," generally collecting from their members a small weekly contribution for which the whole family was attended—3d a week was a very usual figure. Others arranged with the management of large works and collieries for a similar weekly or fortnightly deduction from wages which also covered the attendance on the whole family. Philanthropic persons formed "Provident Dispensaries," the members of which paid periodic contributions, and the doctors on the staff for a small annual payment saw them in their homes when necessary, or at a dispensary which was similar to an outpatient department at a hospital. Sometimes the parson or the "Lady Bountiful" of a village would organize a medical club.

The most widespread contract practice arrangement was through the Friendly Societies and Trade Unions. These bodies, sometimes only local, but more generally with branches throughout the country, gave to their members certain benefits—unemployment, sickness and funeral benefits were the most usual, but medical attendance was very frequently supplied. The members of these societies paid weekly contributions. Each local branch or "Lodge" would appoint its own doctor and pay him a sum varying from 2s. 6d. to 5s. per member per annum, and for this sum the doctor undertook to give ordinary medical attendance and medicines to each member.

There were variants of the above method, but I need not go into further detail except to mention that in some parts of industrial Lancashire contract practice of the kind described never took root. Bills were sent in to the patients as in ordinary private practice and these bills were regularly collected, generally in sums of 1s. per week. The Lancashire workmen who paid under this system regarded the visit of the doctor's collector as much a matter of course as the workman in

other districts regarded the deduction of his 6d. or 9d. a fortnight from his wage.

THE EFFECT OF CONTRACT PRACTICE ON THE MEDICAL PROFESSION

The system just described was subject to great variations all over the country, but with few exceptions all the methods agreed in the following particulars:

(*a*) Being based originally on a charitable desire to help people who were considered to be unable to pay ordinary fees, the remuneration was always inadequate.

(*b*) Like all other work which is underpaid, it tended to be scamped. The average doctor, of course, gave his best when the patient was really ill; but much of the work was done in a perfunctory and casual way.

(*c*) The system was taken advantage of by people whose circumstances gave them no claim on a service of a semi-charitable nature. The element of charity was ignored or forgotten, and the people in question looked upon it simply as a cheap way of getting their doctor. It was the knowledge of this that made the demand for an income limit such a war-cry in the insurance act fight.

(*d*) Contract practice therefore fell into disrepute. Many of the best doctors would not touch it, and patients frequently grew dissatisfied and went off to "a private doctor," paying him fees which they could sometimes ill afford.

(*e*) The system did not pretend to cover all that a patient might need in the way of medical attendance. It only supplied the patient with ordinary attendance. For the services of a specialist or institutional treatment he had generally to resort to a charitable institution. Sometimes he would scrape together money for a consultation, but only rarely could he afford to have operations or other special treatment on private terms.

(*f*) It had a demoralizing effect on the medical profession. Ridiculous though the remuneration was, the appointments were much sought after by men commencing practice, as a means of getting known. Some doctors specialized in club appointments; and, by getting a large number of them, not only earned aggregate sums of a considerable amount but kept out inconvenient rivals. In some districts, canvassing and various kinds of subterraneous influences were used, which not only had a bad effect on the morale of the local profession but gave rise, not unnaturally, to the impression on the part of those who administered the clubs that the doctors considered the pay to be adequate.

THE BRITISH MEDICAL ASSOCIATION AND THE REFORM OF CONTRACT PRACTICE

This question of contract practice was the main object of attention of the British Medical Association in the years 1903-1910 which followed its reorganization on modern democratic and fighting lines. Much information was collected, and great efforts were made to improve conditions in those areas where the association was strong. That there was room for improvement is shown by the following figures, the result of inquiries made by the association in 1905 as regards the remuneration received for this contract work:

Replies to inquiries were received from 1,548 doctors. The remuneration varied between 2s. and 6s. per member per annum, to include the provision of medicines. Twenty-three per cent. paid less than 4s. a year, and 23 per cent. paid 5s. and over. The great majority paid 4s. In the majority of the clubs there was no wage limit, and many cases of gross abuse by well-to-do people were given. Three hundred and ninety-three doctors answered the question as to what fee they considered would be adequate; 145 of these named 5s. per member per annum.

It must be noted that the abolition of contract practice was never contemplated as a matter of practical politics. It was always recognized that in most areas for some classes of working people contract practice was the only practical method available. The Association was in the midst of a resolute campaign to evolve some sort of order out of this chaos, and to put contract practice work on a basis that would allow of the profession regarding it, if not with satisfaction, at least without a sense of shame, when, in 1909, the Reports of the Royal Commission on the Poor Law appeared. This Commission was a very important body whose reference was to consider the whole question of the relief of distress, and naturally the provision of medical attendance occupied a conspicuous position in their reports. There was a Majority Report and a Minority Report. These differed in the treatment proposed, but they agreed on diagnosis. Both agreed that the then existing provision of medical attendance for the working classes was thoroughly unsatisfactory. The majority recommended that it be reorganized on an insurance basis. The minority wanted medical service to be municipalized, paid for out of the rates, with the right on the part of the Local Authorities to recover the charges from those able to pay.

Immediately on the issue of these Reports, the British Medical Association began to consider them and to try to devise a scheme which should avoid the setting up of a state or municipal whole-time service, which the profession with very few exceptions strongly disliked, and still dislikes. The whole situation was, however, changed with the advent of Mr. Lloyd George's National Health Insurance Bill in 1911. He boldly adopted the principle of insurance—not voluntary but compulsory—for all manual workers whatever their income, and (with insignificant exceptions) for all other workers whose wages did not reach the then existing income tax limit of £160 a year. It is now £250.

THE NATIONAL HEALTH INSURANCE BILL OF 1911

I will not attempt to enter into details about the struggle by which the profession, with a considerable amount of success, tried to mold the National Insurance Bill of 1911 into a measure which should be acceptable to it. The "Report for 1912-13 on the Administration of the National Insurance Act, Part I," published by the government in 1913 (Cd. 6907), which is a very fair and complete, though necessarily concise, statement of the position, should be studied by all who wish to know the details of the introduction of the Act, and its administration in its earlier stages. A fundamental complaint always made by the British Medical Association, on which the whole burden of the fight on the professional side fell (it cost our funds £30,000 in addition to large sums spent out of special voluntary funds, raised by the association), is that Mr. Lloyd George, then Chancellor of the Exchequer and in charge of the bill, did not consult the representatives of the medical profession until he had laid down the main lines of the bill in consultation with the Friendly Societies and Trade Unions. It is true that the cooperation of these bodies (which under the name of "Approved Societies" administer the Sickness Benefit) was essential for the acceptance and the satisfactory working of the measure. But, though Mr. Lloyd George did not at first see it, the cooperation of the medical profession was no less necessary. It may be said without fear of contradiction that the determination the profession showed and the sympathy it was able to enlist among the public and in Parliament made it impossible for the future that any parliamentary bill of any consequence affecting the medical profession should ever be introduced without consultation with the British Medical Association.

The following demands were formulated by the Association and became known as the "Cardinal Points" of the profession:

1. An income limit of £2 a week for those entitled to medical benefit.

2. Free choice of doctor by patient, subject to consent of doctor to act.

3. Medical and maternity benefits to be administered by insurance committees and not by Friendly Societies. In connection with the question of the method of administration of medical benefit, the Representative Meeting[1] of the Association resolved that all questions of professional discipline should be decided exclusively by a body or bodies of medical practitioners, and that the power of considering all complaints against medical practitioners should be vested in a local Medical Committee, with a right of appeal to a central Medical Board to be appointed for that purpose.

4. The method of remuneration of medical practitioners adopted by each Insurance Committee to be according to the preference of the majority of the medical profession of the district of that committee.

5. Medical remuneration to be what the profession considers adequate, having due regard to the duties to be performed and other conditions of service.

After careful consideration, the representative meeting resolved that the claim of the association should be for 8s. 6d. as a minimum capitation fee, not including extras and medicine.

6. Adequate medical representation among the insurance commissioners, in the central advisory committee, and in the insurance committees, and statutory recognition of a local medical committee representative of the profession in the district of each insurance committee.

1. *The Income Limit.*—This was fought strenuously, but was from the first denied by the government, whose action was endorsed by large majorities in Parliament. We were always told that it was administratively impossible: that the wages of manual workers varied so much that if an income limit were fixed very large numbers would be constantly "in and out," and that no effective insurance scheme could be worked on such a basis. A concession was made (on paper) in the later stages of the bill, and the Insurance Committees (which administer Medical Benefit) were empowered to fix a *local* income limit. This has been a dead letter.

2. *Free Choice of Doctor by Patient and Vice Versa.*—This was gained. Patients choose any doctor they like on the local list and have the right of changing, without consent of the doctor, twice a year. A change can be effected at any time by mutual consent.

3. *Medical and Maternity Benefits to Be Administered by Insurance Committees and Not by Approved Societies.*—This was gained, so far as medical benefit is concerned. Maternity Benefit is merely a cash payment, and the medical profession, as soon as it realized this, did not press that point. The profession was determined, after its experience of club practice, that it would not put itself under the control of the Approved Societies or any similar bodies, though it had no objection to the control of a public body on which the profession, as well as the Approved Societies, were represented. Complaints against doctors are decided, not by an exclusively professional body as demanded in the Cardinal Point, but by a body composed half of doctors and half of representatives of Approved Societies, with an independent Chairman appointed by the Insurance Committee. The plan works very well, and there are practically no complaints about it.

4. *Method of Remuneration to Be as Decided by the Profession Locally.*—This was gained. In every Insurance area in the country except two (Manchester and Salford), the capitation system was chosen. The two areas named work on a payment per attendance basis, but it must be remembered that, whatever the method chosen, the amount to be distributed locally is allocated from a Central Pool and is in proportion to the number of insured persons in the area. Therefore, the profession as a whole in any area gets the same total remuneration whether they are paid by one method or by the other.

5. *The Amount of Remuneration.*—This has never yet been considered adequate. The original amount offered was 6s. a head, to include drugs. Before the Act came into operation this was increased to 9s. a head, to include provision of drugs. Of this the doctor who did not provide drugs received 7s., with a chance of getting anything up to another 6d. if the chemists' call on the drug fund proved to be more than 1s. 6d. but less than 2s. The amount now (since January, 1920) is 11s. a head for medical attendance alone, and the state takes full responsibility for the drug bills. The doctors who attend persons not within reach of a chemist provide the drugs and get for this service 2s. a head of all those on their dispensing list.

6. *Representation of Profession on Various Administrative Bodies: Statutory Recognition of Local Medical Committee.*—The representation of the profession on the Insurance Committees has never been considered to be adequate, though less is heard about the point now than formerly, because more and more responsibility in purely professional matters is being placed on the Local Medical Committee and the Panel Committee, of which more later. A medical representative was placed on the commissioners who administered the act centrally, and full representation was given to the profession on an Advisory Committee set up to be consulted by the commissioners in questions about regulations.

It is interesting to note, in connection with the question of remuneration, that the government in 1912, before the Act came into operation, with the agreement of the Association made an inquiry in five selected towns to ascertain what was the annual cost of medical attendance and drugs per head of the population, including rich and poor and both private and contract practice. The inquiry was conducted by an eminent accountant, agreed upon by both parties, and the result showed that the cost per head (excluding operations and institutional treatment) was 4s. 5d. a year. The Association did not accept all the conclusions which the government drew from this inquiry, but the figures undoubtedly made a considerable impression both on the public and the profession.

THE ACT GOES INTO EFFECT

The Medical Benefit of the Act came into force, Jan. 15, 1913, and up to the last moment the profession declared itself unwilling to accept the terms offered. The temper of the profession was thoroughly roused, and feeling ran exceedingly high. Largely attended meetings of doctors were held all over the country at which votes were taken which showed almost everywhere a large majority against accepting service. At a meeting, Dec. 21, 1912, of the Representative Body of the Association, at which representatives from every part of the country attended, it was decided by a large majority to refuse the final offer of the government. Shrotly after that date, however, a "rot" set in, and on January 3 the government announced that over 10,000 doctors had accepted.

1. This body corresponds to the House of Delegates of the American Medical Association.

LESSONS TO BE DRAWN FROM THE FIGHT

It would serve no good purpose now to enter closely into the history of that struggle, but it is only fair to the British profession that I should set down a few of the extenuating circumstances which ought to be taken into consideration and some of the lessons which, looking back on the whole business, I think can fairly be drawn.

First, we had no experience to guide us as to what the effects on the profession of such a national system were likely to be, and, like everybody else, we dreaded the unknown. The German experience was not of much use. Our system is very different from the German system in almost every particular.

Secondly, there was a good deal of political feeling mixed up with the whole affair. I am afraid that this is inseparable from the introduction of any such system. I do not mean to suggest that the great majority of the profession were consciously affected by party considerations. But Mr. Lloyd George's position in the country was very different then from what it is now. He was then the demagogue of the advanced Radicals and had made himself very objectionable to all persons of a conservative tendency, of whom there is a fair share in the medical profession. Party politics at that particular time were perhaps as strongly held and were as strongly in evidence as at any time in the history of this country.

Thirdly, although we did our best to secure the opinion and test the trustworthiness of every member of the medical profession, there was always a considerable section who would attend no meetings and give no pledges. At the end, the attitude of these men was the subject of much suspicion on the part of the others, and an exaggerated idea of what a few men could do in the way of "collaring" the work led the weaker brethren to stampede. This tendency was greatly increased by the action of the government, who made it known that they had an army (it must have been a very small one) of men who were prepared to work the system anywhere. It is quite certain that if this had been the only weapon of the government, they could have been beaten easily had the profession felt the final offer to be so bad that it must be resisted at all hazards. The strongest weapon of the government was that the increased money offer and the alterations that the profession had secured in the bill had gradually led many doctors to the belief that the new system would pay them. Men who had, more or less willingly, been doing a large amount of contract practice at 3s. 6d. a head came to the conclusion that double that amount made it well worth while to accept the new service.

Fourthly, we had had no experience of fighting a government. In the earlier stages many doctors underestimated the magnitude of the task; later they unduly exaggerated it. The government (after the act had been passed and before it came into operation) astutely fostered the idea that the profession was attempting to upset the decisions of Parliament, and gained the sympathy of many of the public who had hitherto regarded the profession with the admiration the British public always shows for a good fighter. The British public loathe "direct action" because it is unconstitutional and even more because it is unsportsmanlike. They hold that when the decision of Parliament goes against you it is your business to try to alter the composition of Parliament or the opinion of the majority but not to refuse to accept its decision. It is impossible to exaggerate the importance of carrying public sympathy in such a fight. We had it with us all the time we were fighting for "free choice of doctor," adequate remuneration, and a reasonable voice in the way the professional side of the act was to be worked. We lost much of it when people began to think that we were irreconcilable and unconstitutional.

Finally, we had really done very well. No unprejudiced man now looking back at the bill as introduced and comparing it with the act as it passed could fail to see that our fight had greatly improved our position. The attitude of a considerable section of the public was well voiced by the *Westminster Gazette*, which said, apropos of a demonstration of disappointed doctors, "We all admire a man who does not know when he is beaten. The trouble about B. M. A. is that it does not know when it has won."

OUTLINE OF SYSTEM AS AT PRESENT CONSTITUTED

I come now to the present position. The Insurance Act of 1911 has been modified in important respects by subsequent Acts, but the plan of the medical service remains essentially the same. The Insurance Commissioners first appointed to administer the Act centrally have been merged in the Ministry of Health, and the efforts of the Ministry are being directed to the coordination of the medical attendance on insured persons with the various other forms of medical service, domiciliary, preventive and institutional.

The National Health Insurance Service is regulated by the various Acts, supplemented as regards details by Regulations made by the Ministry which have all the force of an Act of Parliament while they exist, though they can be altered much more easily. The service is administered locally by Insurance Committees, of which there is one in every County and County Borough, 200 in all in England, Scotland and Wales. There is no medical benefit in Ireland, and what I have to say does not apply to that country, where conditions economically, socially and medically, differ materially from those on this side of the Irish Channel. Irish insured persons receive sick benefit when they are ill, but their medical attendance is not provided by the Insurance Committees. The contributions of Irish insured persons are therefore less than those in Great Britain.

The Insurance Committees administer Medical Benefit; that is, they are responsible for the provision of medical attendance for every insured person in their area. The Approved Societies (the old Friendly Societies, some of the Trade Unions, and some other societies which are branches of the big Industrial Insurance Companies) administer Sickness Benefit and Maternity Benefit. That is, they distribute the appropriate sums of money to insured persons who are sick, and to the insured women and the wives of insured men when they are confined.

Every doctor on the British Register has a statutory right to be on the list of doctors for the insurance area or areas in which he or she practices, and he can only be removed from that list at his own wish or after an inquiry in which he is proved to the satisfaction of the Minister of Health to be unfit to be on that list. I will deal with the question of disciplinary inquiries separately. There are in England, Scotland and Wales 33,304 doctors on the Register, all of whom have a right to do National Insurance work. But you must exclude all the doctors who are not in general practice, as well as the considerable number who do not practice among the industrial classes. Probably 24,000 are in general

practice. Of these there are 12,850 actually doing National Insurance work (December, 1920). In the industrial and rural areas the great majority of the doctors are insurance practitioners. In many areas every doctor is so acting. In the towns with a more residential population, such as seaside and pleasure resorts, the proportion of doctors not doing this work is naturally greater. There is a considerable number of doctors who, though general practitioners in industrial areas, have always declined to take part in the service, and many of these are associated in the National Medical Union, to which the Insurance service has always been anathema. Its membership is probably well under 1,000, though no recent figures are available. Some doctors have refused to take part in the service because of a rooted disbelief in any form of contract practice, some because they took part in the fight against the Insurance Act and still object to it, some because the quality of their practice is such that they think they do better by declining to accept insured persons, as such, as patients.

The number of insured persons in Great Britain is approximately 12,500,000, so that the average number of insured persons in the care of one doctor is under 1,000. The lists or "panels" vary from one to two hundred to between 4,000 and 5,000; but these very big lists are *very* exceptional and will soon be unknown, as by the latest regulations no doctor, unassisted, may have more than 3,000 on his list (in some areas less, for there is local option as to the maximum number so long as it is not above 3,000). Doctors who last year had more than the maximum for their area have been given a year during which they may either reduce their lists, or take a partner or assistant.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

SILVER ARSPHENAMINE.—Argentum arsphenamina.—Sodium Silver Arsphenamine.—The sodium salt of silver-diamino-dihydroxy-arseno-benzene (the exact molecular formula has not been established). It contains approximately 20 per cent. of arsenic and approximately 15 per cent. of silver.

Actions and Uses.—Silver arsphenamine has practically the same uses as those of arsphenamine (see New and Nonofficial Remedies, 1921, p. 41). Its claimed advantage over other arsphenamine preparations is said to be due to the introduction of the silver (nonionizable form) as a component, thereby improving the chemo-therapeutic index, presumably because of the fact that silver and its compounds have a decided antisyphilitic influence.

In the presence of organic diseases of the heart, aneurysm, aortitis, as well as other parenchymatous diseased conditions of the glandular structures (liver and kidney), silver arsphenamine should be used only with great precaution and in small doses, the patient and all functions being observed most carefully.

If angioneurotic symptoms appear shortly after the injection, they should disappear rapidly; usually they may be avoided by the use of considerably diluted solutions. Susceptible individuals should not be treated during working hours. Hypersensitive patients should recline for some time after the injection. Argyria may occur rarely as a sequel to the use of the preparation.

Dosage.—From 0.1 Gm. to 0.3 Gm. for adults. The treatment should begin with an injection of 0.1 Gm., gradually increasing the dosage, at intervals of not less than four days, to 0.2 Gm. maximum in women and 0.3 Gm. in men. The larger doses are only indicated if the preparation is well tolerated by the patient. The dosages 0.2 to 0.25 Gm. may be given at regular intervals of four days and repeated until the desired therapeutic results have been achieved. Patients with disorders of the nervous system or those suffering from severe headaches should be given smaller initial doses, 0.05 and 0.075 Gm. When these amounts are well tolerated, larger doses may be employed, increasing very gradually.

In preparing the solution for injection, the ampule is first sterilized by immersion in alcohol for 15 minutes; after opening the ampule, the contents are sprinkled on the surface of 5 Cc. of cool (20-22 C.), sterile, distilled water, contained in a small sterile flask. The silver arsphenamine will go into solution rapidly; heating and shaking must be avoided. A quantity of cool sterile solution of sodium chlorid, 0.4 per cent., is then added so that the final solution will approximate 20 Cc. of liquid per decigram (0.1 Gm.) of the drug. *The solution must be administered promptly.*

Silver arsphenamine is prepared by treating the dihydrochloride of 3-diamino-4-dihydroxy-1-arsenobenzene (arsphenamine) with silver salts, converting the resulting compound to the disodium salt, and precipitating by means of alcohol, ether or acetone. The silver is not in an ionizable form.

Silver arsphenamine is a brownish-black powder, unstable in air; when properly dried it is free from lumps. It is readily soluble in water, yielding a dark brown solution (*distinction from arsphenamine, sodium arsphenamine and neoarsphenamine);* the solution has an alkaline reaction (*distinction from arsphenamine).*

The addition of dilute sodium hydroxide solution to 3 Cc. of an aqueous solution of silver arsphenamine (1 to 500) produces no precipitate (*distinction from arsphenamine*). On the addition of 1 Cc. of sodium carbonate test solution to 1 Cc. of silver arsphenamine solution (1 to 20) no precipitate is formed (*distinction from arsphenamine*). The addition of 1 Cc. of saturated solution of sodium bicarbonate to 1 Cc. of silver arsphenamine produces a precipitate.

One Cc. of an aqueous solution of silver arsphenamine solution (1 to 20) when slightly acidulated with dilute hydrochloric acid yields a precipitate (*distinction from arsphenamine*). This precipitate dissolves on the very careful addition of more acid; on heating no irritating odor of sulphur dioxide should be detected (*distinction from neoarsphenamine*). However, a large excess of hydrochloric acid yields a precipitate. The careful addition of 3 Cc. of acetic acid test solution to 3 Cc. of silver arsphenamine solution (1 to 20) produces a precipitate (*distinction from arsphenamine*), a portion of which dissolves on further addition of the acetic acid test solution. When 3 Cc. of silver arsphenamine solution (1 to 20) is heated with a few crystals of potassium permanganate (*without addition of alkali; distinction from arsphenamine*), the permanganate is reduced and ammonia is evolved which may be tested by placing a moistened piece of red litmus paper in the vapors; the litmus paper will turn blue. The precipitate thus formed may be treated with hot nitric acid test solution, boiling for a few minutes, then cooled, diluted and filtered; the filtrate will yield a precipitate of silver chloride on the addition of hydrochloric acid (*distinction from arsphenamine, neoarsphenamine, and sodium arsphenamine*). The addition of 1 Cc. of trinitrophenol (picric acid) test solution to 1 Cc. of silver arsphenamine solution produces a yellow precipitate (*distinction from neoarsphenamine*). The addition of 1 drop of ferric chloride tert solution to 1 Cc. of silver arsphenamine solution (1 to 500) produces a deepening of the brown color, with a slightly purplish tint (*distinction from sodium arsphenamine*), the liquid finally becoming turbid; if a more concentrated solution of silver arsphenamine (1 to 20) is employed, an immediate precipitate is formed. The careful addition, drop by drop, of bromine water to 3 Cc. of silver arsphenamine (1 to 250) produces a reddish coloration, which is discharged by an excess of the reagent; there is also formed a precipitate which dissolves on addition of a large excess of concentrated ammonia water *(distinction from arsphenamine, neoarsphenamine and sodium arsphenamine).* To 1 Cc. of silver arsphenamine solution (1 to 20) add 1 Cc. of hydrogen peroxide test solution; a brown precipitate resembling silver oxide is formed and the supernatant liquid is almost colorless (*distinction from arsphenamine, neoarsphenamine and sodium arsphenamine*). To 1 Cc. of silver arsphenamine solution (1 to 20) add 1 Cc. of sodium chloride test solution; no precipitate forms (*absence of ionizable silver*). (A concentrated sodium chloride solution added to a strong solution of silver arsphenamine causes a precipitate to form, due to "salting out" action.)

Place about 0.2 Gm. of silver arsphenamine, accurately weighed, in an Erlenmeyer flask, and carry out the Lehman process (described in the Public Health Reports **33:** 1003 [June 21] 1918) through the point of digestion. While the solution is hot, add cautiously dilute hydrochloric acid solution in order to obtain the precipitation of silver chloride. Filter off the silver chloride through a tared asbestos gooch crucible, wash well and weigh; from the weight of silver chloride, the percentage of silver may be calculated. The filtrate from the silver chloride is carried on in the usual manner according to the Lehman method, thereby determining the arsenic content. The total silver content of the drug shall be approximately 15 per cent. and the total arsenic content shall be approximately 20 per cent.

To determine the toxicity, select not less than five healthy albino rats weighing between 100-150 grams (pregnant animals shall not be used), prepare a 2 per cent. silver arsphenamine solution and inject the solution into the saphenous vein of each rat at the rate of not more than 0.5 Cc. per minute. The rats shall not be anesthetized for the injection. At least 60 per cent. of the series of animals injected with the maximum tolerated dose should survive forty-eight hours from the time of injection; the maximum tolerated dose shall not be below 0.12 Gm. per kilo body weight.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 7, 1921

As our readers know, there has been a general strike of printers involving most of the country. The cause of the strike was, briefly, that the employers asked for a reduction in the scale in accordance with an understanding that readjustment in the scale would be made in accordance with the reduction in the cost of living. A board of arbitration was created to make such adjustment. This board did not hand down its decision until Tuesday, May 3. The award was a reduction of $4.35 a week in the scale. Meanwhile the printers went on strike Monday morning, May 2, for a forty-four hour week. When the above award was made the unions claimed that it applied to a forty-four hour week. This required another adjustment, which was finally made Thursday night, May 5. The final adjustment means that the present scale per hour is the same as prevailed previous to the arbitration, i. e., since last October.

Our printing plant was closed from Monday until Friday. This explains the delay in issuing the present number and made it necessary to decrease the size of THE JOURNAL this week. The Boston number—a special number, almost double the size of the ordinary issue and originally scheduled for May 14—will be issued May 21.

NATIONAL HEALTH INSURANCE IN ENGLAND

Quite contradictory statements have been, and are still being, made respecting the effects of compulsory health insurance in England on medical practice and on the medical profession. Many of these statements have evidently been based on superficial knowledge. Believing that our readers would be interested in knowing how this form of practice actually is working out in England, and presuming the British Medical Association to be the most reliable source from which to obtain the information, we wrote to the secretary and asked him if he could secure for THE JOURNAL an historical and critical review of the subject. He kindly offered to write the article himself, and we print the first instalment this week.[1]

Dr. Cox first describes conditions in medical practice preceding the time when the national insurance act was passed. This was a happy inspiration, for we are concerned not alone with the question whether or not the scheme is working satisfactorily, but also with the extent to which conditions in England resemble those prevailing in this country. Even a superficial reading of his introduction will emphasize what has been known to those who have investigated the matter, that the conditions of medical practice which existed in England have no counterpart whatever in this country. Granting—although it is not universally accepted—that compulsory health insurance was a wise solution of their problems, it is not a solution of our problems, because we have not the same conditions as those which affected the British profession and the British public. Friendly societies (sick and death benefit clubs), lodge practice and contract practice in their worst forms were almost universal; competition by physicians for the position of club doctor was common, and the result was not only low fees but also work done in a perfunctory manner—good for neither doctor nor patient. The whole business naturally had a demoralizing influence on the medical profession and on the practice of medicine.

For the purpose of this comment, the English profession may be grouped into three classes: (1) those whose practice was limited to friendly society, lodge and contract work, and who now devote themselves to panel or insurance work; (2) those whose practice included the foregoing and also private practice, and (3) those who did private practice only, usually among the well-to-do. Included in the third group would be surgeons, ophthalmologists and others doing special work. So far as concerns the first group, the national insurance act evidently has been beneficial and has brought about more satisfactory conditions of practice, and better pay. This can easily be believed when the old conditions are recalled. The third group would be affected practically not at all. It is in the second, and presumably the largest numerically, that we might expect a divided opinion. But evidently, from Dr. Cox's article, there is no serious opposition to the present scheme even in this group.

Taking it all in all, therefore, the reading of the complete article—only one third appears in this week's issue—will make it quite evident that while compulsory health insurance may be a good thing in England, conditions in this country at this time are such that there is neither a need nor a desire for it. It is not worth while to take a nauseous medicine to cure a disease that does not exist. Nevertheless, we have more than an academic interest in the problems of our British confrères and how they have solved, or are solving, them.

1. Cox, Alfred: Seven Years of National Health Insurance in England: A Retrospect, this issue, p. 1308.

Our thanks are due Dr. Cox for the complete way in which he has made it possible for us to place the facts before our readers.

VARIABILITY IN THE CLINICAL TYPES OF SYPHILIS

The progress of the disease which follows a microbial invasion of the body is usually characteristic, and the manifestations ordinarily make their appearance in such fixed succession that the deviations from the usual course of infections are not so readily appreciated. Nevertheless, in many disorders diversity is quite as frequent as uniformity of phenomena. For example, to quote a recent writer, syphilis in the human subject is characterized by the occurrence of a succession of lesions of various types which follow one another in a more or less orderly progression from the chancre to the terminal stages of the infection; and while to each period of the infection certain types of lesions have been assigned, the order of their appearance is not entirely fixed, nor can one say just what lesions may be expected to occur in a given case.

It must be remembered that the invading microorganism is not the only factor that may be subject to variation and thus change the course of the disease which it initiates. Undoubtedly there was a time, earlier in the history of bacteriology, when the influence of bacterial variability on differences in virulence was not adequately appreciated. But the tissues and organs likewise present a factor of inconstant resistance often quite as significant as the invasive property of the infectious agent. Hence it has well been said that the character of an infection, the severity of the reaction and the ultimate outcome are determined by "the balance which is struck between the virulence of the entering germ and the protective mechanism opposed to it."

Factors that may enter into the production of clinical variation in syphilis have been demonstrated in the recent experimental studies of Brown and Pearce [1] at the Rockefeller Institute for Medical Research. They [2] have noted that it is possible to convert a disease that is usually localized into a generalized disease by diminishing or suppressing the primary reaction. In rabbits this was accomplished by purposely varying the testicular reaction. In these animals the occurrence or nonoccurrence of generalized lesions, as well as the character of the latter, appears to depend primarily on a protective reaction which takes place at the primary foci of infection, and to some extent on the relative susceptibility of other tissues. For example, when both testicles are inoculated and the lesions there allowed to progress, a high degree of protection seems to be conferred on other but by no means all tissues of the body. In the experiments of Brown and Pearce, some of the inoculated animals were castrated early, others late; in still others, the testicular reaction was suppressed by the use of arsenicals. By such variations, different types of infection were produced; and in this way it was found that there was a definite sequence of tissue involvement or of tissue reactions which made it possible to produce infection or to confer protection on a given group of tissues according to the nature of the means employed. Correspondingly wide variations in the clinical type of syphilis may be produced. Of course, the added possibility of variations in the biologic properties of the infecting spirochetes must also not be overlooked.

1. Brown, W. H., and Pearce, Louise A.: Experimental Production of Clinical Types of Syphilis in the Rabbit, Arch. Dermat. & Syph. 3: 254 (March) 1921.
2. Brown, W. H., and Pearce, Louise: The Resistance (or Immunity) Developed by the Reaction to Syphilitic Infection, Arch. Dermat. & Syph. 2: 675 (Dec.) 1920.

Current Comment

AIR EMBOLISM FOLLOWING THORACENTESIS

Puncture of the chest, frequently made in the diagnosis and treatment of chest diseases, is usually considered a safe procedure. Accidents, however, do occur. Alarming symptoms and even sudden death have followed the introduction of a hollow needle into the chest cavity, and the absence of any striking changes at necropsy has led to the assumption by some that such deaths were due to a nervous reflex from the pleura acting on the cardiac and respiratory mechanisms by way of the phrenic and vagus nerves. If this view is accepted, accidents may neither be foreseen nor prevented. Sudden death has also occurred, however, in patients previously subjected to thoracentesis many times, and a consideration of cases of this type indicates that there are factors other than a pleural reflex which may be responsible. Following exploratory puncture of the chest with a hollow needle an immediate cerebral disturbance may be set up, giving rise to signs both of paralysis and of excitation. The disturbance may be traced to the entrance of air into one of the pulmonary vessels, the air passing to the cerebral vessels in sufficient amount to impair the circulation. Air emboli may be found also in the coronary arteries and in the superficial blood vessels of the skin. The symptoms of air embolism vary in degree, but in all patients the onset is sudden. The patient may complain of pain in the chest, giddiness, black spots before the eyes, and faintness. In the severer cases there may be nystagmus, and irregular tonic and clonic convulsions of the muscles of the extremities, alternating with paresis. There is dyspnea at first, followed by stertorous and periodic breathing. Death may supervene after a period of hours or days. When consciousness is retained or recovery follows, there may still remain irritation of the cerebral cortex, such as disturbances of sensation, vision or speech. After death, careful examination may reveal gas bubbles in the cerebral or coronary vessels. The amount of air necessary to cause symptoms appears to be small, and it presumably may gain entrance as the hollow needle enters a blood vessel and negative pressure is created by deep inspiration. By careful attention, air embolism in thoracente-

sis may readily be prevented. It has been suggested [1] that a safe way of exploring the chest is "to attach to the outer end of the tubular needle a rubber tube and funnel filled with salt solution and freed from air bubbles. As the needle is inserted, the fluid in the funnel should be held a little above the level of the point of the needle. If serum or pus or blood is reached in the pleural cavity, the fluid will return through the salt solution, and is recognized by inserting a glass tube in the rubber tubing close to the needle. By lowering the funnel the pleural exudation can be siphoned off. If the point of the needle has penetrated the lung, no harm will come from some of the salt solution running into a vein." In case thoracentesis is made with syringe and needle and a little bloody fluid is drawn into the syringe, it is unwise to disconnect the syringe and leave the needle in place, unless care is taken that no air can enter the needle. While it is true that accidents are not frequent relative to the total number of chest punctures, yet it is true also that air embolism has occurred often enough to make the possibility a significant danger when thoracentesis is being performed.

THE FUNGUS PARASITE OF THRUSH

A number of diseases of more or less obscure etiology, notably pellagra and sprue, include stomatitis among their conspicuous symptoms. The occurrence of exfoliations of the mucous membrane in the mouth and the development of lesions there has, for example, caused the designation of "Ceylon sore mouth" to be applied in the tropics to cases of sprue. Thrush, on the other hand, is a form of stomatitis characterized by the now admitted presence of some causative microbiotic organism. Although the discovery of this fact has a comparatively remote history, being attributed to Berg [2] in 1839, the designation of the inciting cause as a fungus to which the name *Oidium albicans* has been assigned is attributed to Robin at a later period. Uncertainty as to the identity of the causative organism has been occasioned by the finding of more than one form of invader, sometimes filamentous types, sometimes yeastlike cells, sometimes both being present in the membranous coatings. To explain these seeming discrepancies, it has been suggested that the fungus may be pleomorphic, presenting itself under two forms. This admitted property of certain micro-organisms has lately been appealed to in other cases in which contending claims as to the nature of infectious agents in disease have been at issue. In this connection one recalls the ardent disputes in relation to the etiologic factor of epidemic poliomyelitis. Working in the department of bacteriology at the University of Minnesota, Fineman [3] has apparently succeeded in furnishing a tenable explanation of the conflict of facts and opinions regarding the parasite of thrush. The latter is correctly classified in the genus *Oidium*. The organism tends to assume a mycelial form in liquid mediums, in mediums containing complex carbohydrate, in mediums of low oxygen tension, and in mediums of low surface tension, while the unicellular or yeastlike form occurs in solid mediums, in the presence of simple carbohydrates, an abundance of oxygen, or mediums of higher surface tension. These factors, Fineman adds, may be interrelated, while other factors as yet unknown may affect the morphology. It is suggested that pleomorphism of this organism is an attempt at adaptation, the mycelial form developing in relatively unfavorable conditions.

1. Medical Science Abstracts and Reviews **3**: 521 (March) 1921.
2. Berg: Ueber die Schwämmchen bei Kindern, Bremen, 1848.
3. Fineman, Bertha C.: A Study of the Thrush Parasite, J. Infect. Dis. **28**: 185 (Feb.) 1921.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Annual Meeting of Physicians.—The State Medical Association held its fifty-fourth annual session at Montgomery, April 19-21, under the presidency of Dr. Louis William Johnstone, Tuskegee. The program included the following papers by visiting physicians: Dr. Charles A. Waters, Baltimore, on "The Value of the X-Ray in the Diagnosis of Diseases of the Internal Organs"; Dr. Fred H. Clark, Oklahoma, "Surgical Considerations of the Hypertrophied Thyroid Gland"; Dr. H. Dawson Furniss, New York, "Renal Tuberculosis"; Dr. James R. Garner, Atlanta, Ga., "Fractures Requiring Operative Treatment"; Dr. Frank R. Ober, Boston, "The After Care of Poliomyelitis"; Dr. Edward H. Cary, Dallas, Texas, "Some Interesting Phases of the Nasal Question"; Dr. John Lovett Morse, Boston, "The Funtlamental Principles of Artificial Feeding of Infants"; Dr. James S. Stone, Boston, "Umbilical Infections of the New-Born"; Dr. Frederick R. Green, Chicago, "Social Responsibilities of Modern Medicine." The Jerome Cochran Lecture, an annual feature in memory of the founder of the association, was delivered by Dr. J. Whitridge Williams, Dean of Johns Hopkins, Baltimore. His subject was "A Critical Review of Twenty-One Years' Experience with Cesarean Section." The association passed resolutions memorializing the state authorities to use their best efforts in order that Dr. William C. Gorgas be designated as one of Alabama's representatives in the "Hall of Fame," and that the new state laboratory soon to be erected in Montgomery be named the Jerome Cochran laboratory in recognition of Dr. Jerome Cochran of Mobile, father of the Alabama medical system. The association voted unanimously to instruct its representatives at the annual meeting of the American Medical Association to vote against any proposal for the enactment of compulsory health insurance laws. Dr. Dyer F. Talley, Birmingham, was elected president for the ensuing year; Dr. James A. Howle, Eclectic, vice-president, and Dr. Henry G. Perry, Montgomery, secretary.

CONNECTICUT

Department of Pharmacology and Toxicology Established at Yale University.—As one step in the reconstruction plans of the university the subjects of pharmacology and experimental medicine have been combined as a university department with the title of Department of Pharmacology and Toxicology, the chairman of which is Frank P. Underhill. The functions of the new department are threefold: teaching, research and service to the community and state. Special attention will be devoted to the training of future investigators and teachers, and to the chemistry and physiology of the action of drugs and poisons.

GEORGIA

Making the Roads Safe.—Road-building gangs work under conditions which often compel them to scatter pollution, which may then be carried by flies to kitchens or be ground into the soil and picked up by the bare feet of children, causing hookworm and other intestinal diseases. Malaria also is spread by the ignorance and carelessness with which mosquito-breeding places are created. Dr. Thomas F. Aber-

crombie, state health officer, has therefore suggested that convicts and other gangs working along the roads be required to fill up borrow pits, place culverts properly, clean ditches and attend to other important details to make the roads of the state safe for the people.

ILLINOIS

Old Age No Protection Against Smallpox.—Smallpox draws no age limit. This has been clearly demonstrated by several cases among unvaccinated persons of advanced years that have recently been reported to the state department of public health. Two women of Loogootee, one 92 years old and the other 60, who had not been vaccinated since infancy were victims. A man of 80, at Geff, and one of 72 at Xinia who had never been vaccinated were also attacked by this loathsome disease. Reports show that smallpox has been generally more prevalent in Illinois during the past winter than previously.

Leprosy Causes Undue Alarm.—Considerable alarm and publicity were recently occasioned by the escape of a leper from quarantine in East Moline. Vigorous and earnest efforts to locate the leper were immediately instituted and isolated quarters and a special guard at the state buildings in Watertown are ready in the event of his apprehension. While the search thus far has proved futile and although the case was positively demonstrated as one of leprosy, Dr. Isaac D. Rawlings, director of the state department of public health, takes the position that a single case of leprosy is much less a menace to the public health and is a source of decidedly less danger than the constant exposure to such common diseases as smallpox, diphtheria, scarlet fever, and pneumonia. Smallpox and diphtheria showed a marked increase during the past winter and both diseases are positively preventable. The other common communicable diseases respond readily to control measures and should elicit much greater public concern than a case of leprosy. Leprosy is only mildly contagious in the United States. An investigation into the situation at East Moline brought out the facts that the leper in question is a Greek by the name of Peter Anostassoboulous and that he had been placed under temporary quarantine while awaiting the completion of a United States leprosy colony in Mississippi. Evidence seems to indicate that Anostassoboulous has returned to Greece.

INDIANA

American Hospital Association.—Arrangements have been made by Dr. Andrew R. Warner, Chicago, executive secretary of the American Hospital Association, for the 1921 Conference in the West Baden Springs Hotel, West Baden, September 12 to 17.

Woman Physician on State Board.—Governor McCray has announced the appointment of Dr. Ada McMahan of Lafayette as a member of the state board of health. She is the first woman member. Dr. Hugh A. Cowing of Muncie was reappointed on the board.

Medical Society Elects Officers.—The Third District Medical Society met in New Albany recently and elected the following officers: Dr. John I. Mitchell, Salem, president; Dr. Claude B. Paynter, Salem, secretary. The next meeting will be held at Salem in October.

Personal.—Dr. Frederick E. Jackson, resident physician at the City Hospital, Indianapolis, has been granted a leave of absence by the board of health to take a postgraduate course in London, England. Dr. Louis Reifeiss was appointed to fill the vacancy during the absence of Dr. Jackson. The board authorized the use of the hospital as a meeting place during the state clinical conference of the American College of Surgeons next Monday and Tuesday.

Hospital Association Organized.—The Indiana State Hospital Association was organized April 27 at Lafayette. More than one hundred doctors, nurses, and hospital superintendents from various parts of Indiana were there. The following officers were elected: Dr. George F. Keiper, Lafayette, president; Miss Clara B. Pound of the Reid Memoral Hospital, Richmond, first vice-president; Dr. William O. Gross, Fort Wayne, second vice-president; Miss Anna Mendenort of the Home Hospital, Lafayette, secretary; Mrs. Ethel P. Clark of the Robert W. Long Hospital, Indianapolis, treasurer. The object of the association is to promote cooperation of hospitals throughout the state for common welfare.

IOWA

Prison Sentence for Physician.—It is reported that Dr. F. Pat W. Lindsay, Davenport, who was indicted by the federal grand jury on a charge of obtaining prohibited drugs illegally, has been sentenced to a year in the federal prison at Fort Leavenworth, Kan. Dr. Lindsay's case was continued last year to permit him to take treatment for the drug habit, which the prosecuting attorney claims he has failed to do.

LOUISIANA

Dyer Medical Forum.—The first scientific meeting of the Isadore Dyer Medical Forum, which was recently organized by students of Tulane Medical College, New Orleans, in memory of the late dean, was held last week. Dr. Miranda, Vera Cruz, who was a member of the commission to investigate yellow fever in Mexico, gave a talk on some hitherto unpublished facts concerning yellow fever.

State Medical Society Meeting.—There was held at New Orleans, under the presidency of Dr. Homer J. Dupuy, New Orleans, April 19-21, the forty-second annual convention of the state medical society. Dr. Joseph N. Roussel, New Orleans, made a report on two cases of leprosy apparently cured by anthrax vaccine, since they are free of any of the cutaneous manifestations of the disease after two years. More than 1,000 Louisiana physicians acting through the house of delegates of the state society asked the constitutional convention to abolish the license fee for the practice of medicine now exacted by the state. Officers elected for the ensuing years are: Dr. Joseph E. Knighton, Shreveport, president; Drs. William H. Harris, New Orleans; R. Bruce Wallace, Alexandria, and Kirby A. Roy, Mansura, first, second and third vice-presidents; Dr. Paul T. Talbot, New Orleans (reelected), secretary-treasurer. The 1922 convention will be held at Alexandria. Drs. William H. Seeman and Lawrence R. DeBuys, New Orleans, were named delegates to the American Medical Association convention.

MARYLAND

Hygiene Society Elects.—At the annual meeting of the Maryland Social Hygiene Society, held at the Southern Hotel, April 29, the following officers were elected: Dr. Hugh Hampton Young, president; Mr. Alan Jonston, Jr., secretary, and Mr. Robert Garrett, treasurer.

Typhus Fever in Baltimore.—A case of typhus fever was reported during the past week to the Baltimore City Health Department by a local hospital. Dr. C. Hampson Jones, Health Commissioner, had a thorough investigation made of the case to determine the source of infection. Every precaution had been taken by the hospital to prevent its spread. It is the first case to be reported in the city since last fall and is a mild infection and such as has existed in this country for years.

Personal.—Dr. William Royal Stokes, who has been city and state bacteriologist since 1896, is suffering from a breakdown occasioned by overwork and has entered the Johns Hopkins Hospital for a rest. Dr. Stokes has been granted an indefinite leave of absence by the Baltimore City Health Department and may not return to duty until fall.——Dr. Irwin O. Ridgely, medical superintendent of Mercy Hospital, has tendered his resignation to take effect May 15, when he will enter private practice. Dr. Ridgely has been head of the Mercy Hospital staff since June, 1919.

Officers of the Medical and Chirurgical Faculty Elected.—At the one hundred and twenty-third annual meeting of the Medical and Chirurgical Faculty of Maryland, held April 26, 27 and 28, at the Faculty Building, Baltimore, the following officers for the ensuing year were elected: Dr. Arthur H. Hawkins, Cumberland, president; Dr. William R. White, Ellicott City, Dr. Harry Friedenwald, Baltimore, Dr. Josiah S. Bowen, Mount Washington, vice presidents. Dr. J. Albert Chatard, Baltimore, was re-elected secretary and Dr. Charles Emil Brack, Baltimore, treasurer. Dr. Henry T. Collenberg and Dr. Eldridge E. Wolff, Cambridge, were elected to the State Board of Medical Examiners.

NEW YORK

New York City

Surgical Society Elects.—The New York Surgical Society, at its regular meeting held in the New York Academy of Medicine, April 27, elected the following officers for the ensuing year: president, Dr. John A. Hartwell; vice-president, Dr. Eugene H. Pool; secretary and treasurer, Dr. Seward Erdman.

Alcoholic Cases Increase in Kings County.—A recent report submitted by Dr. Mortimer D. Jones, medical superintendent of the Kings County Hospital, to Bird S. Coler, commissioner

of the department of public welfare, states that 650 persons were admitted to the alcoholic wards during the nine months preceding April 1, while during the corresponding period of 1919-1920 only 299 cases of this kind were admitted. The report also states that the cases have become more acute in character.

Recommendations Adopted by Medical Society of the County of New York.—At its stated meeting, held April 25, the Medical Society of the County of New York adopted a recommendation of its Comitia Minora urging that the profession withdraw its support of commercial laboratories, and that wherever possible patients be referred to laboratories under the supervision of competent and qualified medical men. The Comitia Minora, sitting as a reference committee on the resolutions offered at the March meeting of the society, proposing a comprehensive survey of medical practice, the establishment of a weekly news organ, and recommending the appointment of an executive secretary in common for the state and county societies, recommended that no action be taken on these resolutions for the following reasons: (1) To undertake a survey of medical practice as outlined in the resolutions would require an appropriation beyond the means of the society; (2) the matter of a new organ was now pending before the Committee on Civic Policy; (3) the office of executive secretary for the state society was created by the last House of Delegates; (4) the income of the county society does not warrant such increased expenditure.——Resolutions were introduced recommending that resolutions be introduced into the state society instructing delegates to the coming meeting of the American Medical Association to oppose all resolutions that might be introduced into that body favoring health centers.——Another resolution, introduced by Dr. John P. Davin, was to the effect that, whereas, the proposed amendment to the Volstead act would prevent the manufacture of alcohol and would nullify the right of the physician to prescribe alcohol, and whereas this bill had been presented without any scientific data to show reason why such action should be taken, Congress be urged to delay action until the medical profession had had the opportunity to pass upon this measure, at the coming meeting of the American Medical Association.

GENERAL

"Dr." Hugh Russell Not a Physician.—For the information of those following the testimony in the Stillman case, it should be known that "Dr." Hugh Russell of Buffalo, who, it is reported, divulged a confidential professional statement, is not a physician but is listed as an osteopath and chiropractor.

General Sawyer Opens Offices.—Brig.-Gen. Charles E. Sawyer, personal physician to President Harding, has been assigned three rooms on the first floor, northeast corner of the State, War and Navy Building. The offices are located in Room 244, and were formerly occupied by General Sheridan, General Schofield and General Miles as headquarters of the Army. From these quarters General Sawyer will direct his activities for the establishment of a department of public health and for the arrangement of better hospital facilities for disabled soldiers and sailors.

Volstead Presents Supplementary Measure.—A supplementary measure to the National Prohibition Act forbidding the sale of beer upon a physician's prescription has been presented to the House of Representatives by Congressman Volstead, chairman of the House Committee of the Judiciary. The proposed bill is directed to annul the recent ruling of Former Attorney-General Palmer allowing the sale of beer in the limited quantity of one bottle per day for medicinal purposes. It does not interfere with the prescribing of wines by doctors having obtained the necessary license. The measure also gives the Prohibition Commissioner the authority to revoke and cancel licenses granted physicians who violate the law in prescribing liquor. A suspension of the license is also provided and the holder of the permit is given thirty days notice to show cause why the permit should not be canceled. This machinery of law is placed under the authority of the Attorney-General.

Proposed Amendment to Sheppard Bill.—The equipment and operation of hospitals in all the counties of the United States for the care of maternity cases and the treatment of children is provided in an amendment to the Sheppard bill for the protection of maternity and infancy introduced in the Senate by Senator Moses. Instead of proposed cooperation between the federal and state governments the Moses amendment limits the cooperation to the federal and county governments stipulating that the federal government shall appropriate $5,000 for equipping a county hospital, if an equal amount is furnished by any county and that an additional $5,000 for maintenance every year shall be furnished by the federal government provided the amount is duplicated by the county. Preference shall be given to the care of maternity cases and the treatment of children in these hospitals and a course in elementary nursing covering a year's training shall be conducted. The operation of the proposed act shall be carried out by the Surgeon-General of the U. S. Public Health Service.

Medical Veterans of the World War.—There will be a meeting of the Association of the "Medical Veterans of the World War" on the day preceding the meeting of the scientific sections of the American Medical Association, the time and place to be announced later. Col. V. C. Vaughan is president of this association and Col. F. F. Russell, secretary. All medical officers, contract surgeons of the U. S. Army, and acting assistant surgeons in the U. S. Public Health Service, who have served in the Medical Corps of the U. S. Army, U. S. Navy and U. S. Public Health Service, and all medical members of local boards, members of medical advisory, and district boards, officially appointed by the President of the United States, the Provost Marshal General of the U. S. Army and the governors of the various states are eligible to membership in this organization. The object of this association "is to perpetuate fellowship, to prepare history, secure cooperation for the mutual benefit of the medical men who served in the World War, 1914-1918, and for the mutual improvement and social intercourse of its members."

Philippine Death Rate.—According to the advance report of the Philippines Bureau of Health, for the year 1920, a great improvement in sanitary conditions at Manila was apparent during that year. The death rate was lower than in the four preceding years, being only 26.6 per thousand to an average of 30.27 during the four previous years. The infant death rate also showed a great decrease, being 164.76 against an average in previous years of 326.30 per thousand births. There were only five cases and four deaths from smallpox at Manila, but in the provinces there were several thousand cases and deaths but not so many as in previous years. There were twenty-four cases and three deaths from cholera at Manila, but both at Manila and the provinces the death rate was lower than in the two previous years. Dysentery continues to prevail in the provinces although almost absent from Manila. On the other hand, typhoid fever showed an increase at Manila and a decrease in the provinces. There were also more cases of rabies and some of beriberi. Tuberculosis and malaria continue to be the diseases that cause most deaths in the Philippines.

FOREIGN

Officers of Portuguese Association.—At a general meeting held by the Association of Portuguese Physicians the following officers were elected: A. Neves, president; Anacleto de Oliveira, vice president; Lobato do Carmo and F. Martins Pereira, secretaries.

Government Services

Open Nurses' Training Schools

Due to the increasing demand for nurses in the government hospitals the U. S. Public Health Service has opened two training schools for nurses in its hospitals. One will be inaugurated at Fox Hills, Staten Island, because of its nearness to New York and the other will be located at Fort McHenry near Baltimore. Plans are under consideration for the opening of other nurses' schools as conditions permit in such other hospitals as may be fitted for the work.

Orders Clinic at Army Hospitals

Surg.-Gen. Merritte W. Ireland has given instructions that wherever material is available a clinic be held once a week in army hospitals and attended by all medical officers. All interesting cases are to be presented, examined and discussed. Demonstrations are also to be given in operating-room technic, new procedures in laboratory methods and in roentgen-ray laboratories. In all those cases terminating in death the officers are to be assembled for discussion of the pathologic report and the clinical findings. Conferences frequently on sanitation and communicable diseases are ordered in all the army hospitals.

Marriages

ARTHUR B. GLASCOCK, Baltimore, to Mrs. Eva Modisett Davisson of Rushville, Neb., at Mountain Lake Park, Md., April 6.

HORACE S. VILLARS, Major, M. C., U. S. Army, to Miss Alice E. Stacy of Minneapolis and New York, February 11.

EDMUND R. P. JANVRIN, New York, to Miss Elizabeth Train of Brookline, Mass., April 16.

CHARLES F. W. HORN, New York, to Miss Helen M. Barratt of Scranton, Pa., March 27.

WILLIAM THOMAS PATTON to Miss Alice St. Martin, both of New Orleans, April 20.

WILLIAM N. GOONE to Miss Fae Eisenstein, both of Chicago, April 10.

Deaths

Joseph Mora Moss ⊕ Washington, D. C.; Cooper Medical College, San Francisco, 1894; aged 54; assistant chief medical officer of the Federal Board for Vocational Education, Washington, D. C.; instructor in clinical gynecology from 1895 to 1898 in the University of California, Berkeley and San Francisco; major, M. C., U. S. Army, and discharged, Dec. 14, 1918; died, April 23.

John McLean, Chicago; Rush Medical College, 1863; aged 83; a member of the Illinois State Medical Society; surgeon and medical adviser for the Pullman Car Company for forty years, and at one time local surgeon for the Illinois Central Railroad; a veteran of the Civil War; died in St. Mary's Hospital, Centralia, Ill., April 25.

Edward Constant Seufert ⊕ Chicago; College of Physicians and Surgeons, Chicago, 1893; aged 57; professor of clinical medicine in the Chicago College of Medicine and Surgery; at one time physician at the American and Norwegian-American hospitals and pathologist to St. Mary's of Nazareth Hospital; died, April 27, from carcinoma of the stomach.

Davis Scott Ray ⊕ Cuba, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1892; aged 59; secretary of the Fulton County Medical Society, Fulton County Tuberculosis Association, and Fulton County Physicians' Association; at one time coroner of Fulton County; died, April 16, from heart disease.

William Plummer Swett, Southern Pines, N. C.; University of Vermont, Burlington, 1876; aged 67; a member of the Medical Society of the State of North Carolina; died, April 13, from heart disease, when fire threatened to destroy the hotel where he had been called to attend a patient.

David Fount Howard, Brookfield, Mo.; Washington University Medical School, St. Louis, 1903; aged 51; a member of the Missouri State Medical Association; local surgeon for the Chicago, Burlington and Quincy Railroad; died, April 22, from arteriosclerosis.

Harrie Augustus Littlefield, Newberg, Ore.; University of Oregon, Portland, 1897; aged 46; major, M. C., U. S. Army, and discharged, June 5, 1919; a veteran of the Spanish-American War; died at Tucson, Ariz., April 15, from pulmonary tuberculosis.

Murray Wisner Seagers ⊕ St. Augustine, Fla.; University of the City of New York, 1895; aged 49; a member of the staff of Flagler Hospital, St. Augustine; chief surgeon of the Florida East Coast Railway; died, April 19, from ulcer of the stomach.

Dora Greene Wilson ⊕ Kansas City, Mo.; Northwestern University Woman's Medical School, Chicago, 1886; aged 56; president of the Jackson County Medical Society in 1917; died at Michael Reese Hospital, Chicago, April 4, from uremia.

James M. Daly, Little Rock, Ark.; University of Arkansas, Little Rock, 1897; aged 52; a member of the Arkansas Medical Society; secretary of the Clark County Medical Society in 1920; died, April 17, from cerebral hemorrhage.

Edward Douglas Beauchamp, Bloomfield, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1882; aged 62; at one time president of the Davis County Medical Society; also a druggist; died, April 1, from pneumonia.

⊕ Indicates "Fellow" of the American Medical Association.

Maxim D. Romm, New York; University of Wurzburg, Germany, 1882; aged 67; a member of the Medical Society of the State of New York; at one time visiting physician to Beth Israel Hospital; died, April 22.

James Anderson McKee ⊕ Sacramento, Calif.; California Medical College, Oakland, 1880; Rush Medical College, 1886; aged 66; for two terms a member of the state senate; died, April 20, from cerebral hemorrhage.

William Marshall Barron, Latrobe, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1892; aged 58; a member of the Medical Society of the State of Pennsylvania; died, April 15, from typhoid fever.

Horace Lee Husted, Muscatine, Iowa; State University of Iowa, Iowa City, 1909; aged 37; a member of the Iowa State Medical Society; at one time health officer of Muscatine; died in Iowa City, April 23.

Thomas Alexander Buys, Brooklyn; New York Homeopathic Medical College and Hospital, New York, 1897; aged 50; obstetrician to Cumberland Street Hospital, Brooklyn, for twenty years; died, April 20.

John C. Hartman, Jr. ⊕ North Braddock, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1899; aged 46; a member of the North Braddock council and school board for two terms; died, April 23.

Edwin A. McCornack ⊕ Elgin, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1881; College of Physicians and Surgeons, Chicago, 1889; aged 66; died, April 14, from heart disease.

Claiborne H. Mannar, Rockville, Md.; Bellevue Hospital Medical College, 1898; aged 59; a member of the Medical and Chirurgical Faculty of Maryland; died, April 13, from cerebral hemorrhage.

William Seldon Peirce, Warren, Pa.; University of the City of New York, 1884; aged 63; at one time coroner of Warren County; died, April 13, from cerebral hemorrhage.

B. Howard Lawson, Detroit; Homeopathic Hospital College, Cleveland, 1871; aged 90; at one time vice president of the staff of Grace Hospital, Detroit; died, April 15.

David Rossmann, Wilmington, Del.; Medico-Chirurgical College of Philadelphia, 1912, aged 31; a member of the Delaware State Medical Society; died, April 10.

Harry J. Arnold, Columbus, Neb.; College of Physicians and Surgeons, Baltimore, 1890; a member of the Nebraska State Medical Association; died, April 13.

Samuel M. Gladney, Terrell, Texas; University of Louisville, Ky., 1877; aged 66; a member of the State Medical Association of Texas; died, April 13.

Henry N. Drewry, Altamont, Ill.; Chicago Medical College, 1876; aged 73; died at the Alton (Ill.) State Hospital, April 10, from cerebral hemorrhage.

David Franklin, Louisville, Ky.; Hospital College of Medicine, Louisville, Ky., 1882; aged 66; was found dead, April 7, from accidental asphyxiation.

William P. Murray, Lynndyl, Utah; Ensworth Medical College, St. Joseph, Mo., 1905; aged 52; also a druggist; died in Glendale, Calif., February 8.

Edward S. Kimball, Washington, D. C.; Georgetown University, Washington, D. C., 1866; aged 76; a veteran of the Civil War; died, April 12.

Miles Minor Glass, East St. Louis, Ill.; Rush Medical College, 1886; aged 60; also a druggist; died, March 29, from cerebral hemorrhage.

George Loren McCoy, Philadelphia; University of Pennsylvania, Philadelphia, 1896; aged 48; died, April 6, from uremia.

Charles A. Koder ⊕ Philadelphia; Jefferson Medical College, 1882; aged 60; died, April 9, from cerebral hemorrhage.

George Wooden, Crossville, Ill.; Kentucky School of Medicine, Louisville, 1889; aged 58; died in Oklahoma, recently.

Aurelius Calvin Sherwin, Boston; University of Vermont, Burlington, 1872; aged 80; died, April 8, from pneumonia.

Aaron Markoff, Providence, R. I.; University of Tomsk, Siberia, 1880; aged 65; died at Miami, Fla., April 8.

H. L. Lamar, Rockport, Ind.; Hahnemann Medical College and Hospital, Chicago, 1886; aged 71; died, April 7.

Cornelius Lydecker Demarest, Washington, D. C.; Bellevue Hospital Medical College, 1879; died, April 2.

Joshua H. Nunn, Halls, Tenn.; University of Louisville, Ky., 1885; aged 58; died, April 3.

H. L. Jacobs, Harrisburg, Ark. (license, Arkansas, 1903); aged 69; died, April 10.

Correspondence

THE SHEPPARD-TOWNER BILL

To the Editor:—Perhaps I am undertaking an ungrateful task in attempting by this means to combat what seems to have been a great popular sentiment for the Sheppard-Towner bill. I am encouraged to do this, however, by the appearance in THE JOURNAL, April 30, of a letter by Mrs. William Lowell Putnam of Boston which demonstrates quite clearly that there is at least one courageous soul among the sex, whose desire for better things is based on practical considerations and common sense rather than on unreasoned sympathy and popular glamor. Mrs. Putnam is well qualified to speak on the issue. She has been closely identified with child welfare and maternity work for many years, and has shown an interest and knowledge of the medical problem which is not, unfortunately, found to be a general characteristic of those who give themselves up to the study of this problem. This is shown in her statement that the social and economic matters affecting pregnancy are not of greater importance than the purely medical. It is most unfortunate that the medical profession has not contributed to this view by its own efforts but has relegated a great deal of the agitation on the subject to lay persons. A great many additional objections may be added to those brought forward by Mrs. Putnam against this contemplated measure. No one can deny that proper or sufficient obstetric care is inaccessible to large numbers of our people, and that the United States occupies a position in the column of morbidity and mortality with reference to pregnancy which is not commensurate with its standing as a leading nation.

It may be stated that there is no one factor of as great importance to the health and economic status of a country as a mother well qualified physically to bear and bring up healthy children. The entire fabric of a nation so closely depends on this relationship that there would seem to be no worthier governmental function than to provide or supervise it. But the question remains, Can this be accomplished by the mere appropriation of funds along the lines indicated in this measure, if expended by and supervised by a minor government bureau? Ought we not to look on proper maternity care for the people as one of a number of functions that should be relegated not to a minor, but to a major department, equal in standing and importance to those that are now existing. Without a further scattering of such efforts, an attempt should rather be made to coordinate them under a national department of health or public welfare.

The Sheppard-Towner measure contemplates turning over to the Children's Bureau of the Department of Labor the supervision and practical expenditure of large sums of money, together with the establishment of close relations with the individual states of the Union that includes a supervision of how they shall spend their funds for the same purpose. A department which has been tinctured in a questionable fashion by fads and theories, which has shown itself extremely partial to labor as an entity, which has furthered in some respects class consciousness, and has allowed its power to be used for ulterior purposes, cannot reasonably be entrusted with such an important function as that contemplated by this measure. The Children's Bureau has done excellent work, but it was primarily organized to consider the question of children in industry; and while it might well include in its activities a supervision of their health, it seems unreasonable to conclude that its ministrations can be effectively extended to include the prenatal stage of its wards. Moreover, the scheme as proposed would lead to a centralization of power which is most undesirable in a devlopment that should depend for its success on local and individual effort, a movement in which personality must always exist as a prime determining factor. A broad general policy inaugurated by an essential department of the national government can accomplish a great deal through methods of advice and supervision; but this should not include the intimate relation with local agencies through financial arrangements that in themselves would soon lead to unfortunate consequences and probably wreck the entire scheme.

It is unfortunate, moreover, that the medical profession has not as yet come to the realization that obstetrics and gynecology are major divisions of medical practice, and that in order to assure this position our medical schools must be impressed with this fact. For this the profession is to some degree responsible. The laity must be brought to an appreciation not only of the importance of proper obstetric care but also of the need for further educational opportunities for medical students, at present insufficient to care for all applicants. Moreover, in this, as in many other measures of so-called medical or social reform, too much responsibility has been thrown upon the social workers, visiting nurses, etc., and the physician graciously permitted to occupy a subordinate position. It is no longer possible for medicine to surround itself with the mysticism of the past; there must be a thorough understanding between the physician and the layman, but this cannot be secured if the latter's point of view is made the overshadowing one. Ideals in medical practice have been subjected to many unreasonable restrictions in recent years by the imposition of a variety of laws and acts, but it is questionable whether by such means much improvement has resulted. May we not regard the measure under discussion in a similar light, for by elevating the accessories to obstetric science and turning them over into the hands of laymen will not the dignity of the purely medical aspect be lowered? I believe that the medical profession should oppose the Sheppard-Towner bill as an ineffective measure which, if passed, will ignore or postpone the creation of a national department of health or public welfare. The measure will merely provide for the creation of another elaborately organized and costly bureau in a department whose chief concern and interest lie elsewhere. The practical solution of the important question of proper obstetric care will be deferred and become buried in a mass of sociologic experiments conducted largely by nonmedical persons whose well-meant activities will be swayed by sentiment rather than knowledge.

GEORGE W. KOSMAK, M.D., New York.

THE INCREASED DUTY ON TOOTH BRUSHES

To the Editor:—The attention of the Oral Hygiene Committee of Greater New York has been called to the fact that in the new tariff bill is a clause which increases the duty on imported brushes. This includes imported tooth brushes.

Tooth brushes are essential in the maintenance of mouth hygiene, and mouth hygiene is closely related to health; therefore any duty which increases the cost of tooth brushes will work a hardship on a large class of our people. Parents of large families will find it difficult properly to provide their children with this necessary article for mouth cleanliness.

Our committee respectfully requests your cooperation. We ask your readers to send letters to their congressmen and their senators, protesting against any increase of duty on imported tooth brushes; and we earnestly request that tooth brushes be placed on the free list, as they are by no means luxuries but articles of necessity for the health and welfare of the people.

THADDEUS P. HYATT, D.D.S., New York.
Chairman, Oral Hygiene Committee
of Greater New York.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

March, 1921, **55**, No. 2

Effects of Anoxemia on Respiratory Center in Decerebrate Animals. L. M. Fraser, R. S. Lang and J. J. R. Macleod, Toronto.—p. 159.
Periodic Breathing and Effects of Oxygen Administration in Decerebrate Cats. J. J. R. Macleod, Toronto.—p. 175.
Concentration of Lactic Acid in Blood in Anoxemia and Shock. J. J. R. Macleod, Toronto.—p. 184.
Comparison of Electrical Conductance of Electrolytes and Their Toxicities to Fish. F. B. Powers, Urbana, Ill.—p. 197.
Light-Spot Adaptation. K. Dunlap, Cleveland.—p. 201.
Studies on Visceral Sensory Nervous System. VI. Lung Automatism and Lung Reflexes in Cryptobranchus; Physiology of Lung of Necturus. A. B. Luckhardt and A. J. Carlson, Chicago.—p. 212.
Study of Low Oxygen Effects During Rebreathing. E. C. Schneider and D. Truesdell, Garden City, N. Y.—p. 223.
Physiology of Stomach. LIII. Secretory Response of Gastric Mucous Membrane to Water and Saline Solutions. G. F. Sutherland, Chicago.—p. 258.

American Journal of Roentgenology, New York

March, 1921, **8**, No. 3

*Diagnosis of Primary Tumors of Lung. A. C. Christie, Washington, D. C.—p. 97.
Clinical Importance of Different Types of Pulmonary Tuberculosis as Determined by Roentgen-Ray Examination. R. G. Allison, Minneapolis.—p. 103.
Value of Lateral and Oblique Roentgen-Ray Studies of Chest. W. A. Evans, Detroit.—p. 106.
Simple and Practical Method for Rapid Hardening of Gas Tubes. S. H. Levy and H. Mann, New York.—p. 112.
Technic of Roentgen-Ray Examination of Kidneys. W. S. Lawrence, Memphis.—p. 115.
Subphrenic Pneumoperitoneum. I. C. Rubin, New York.—p. 120.
Detection of Retroperitoneal Masses by Aid of Pneumoperitoneum. L. R. Sante, St. Louis.—p. 129.
Collateral Treatment of Malignant Cases Undergoing Radiotherapy. E. H. Skinner, Kansas City, Mo.—p. 138.

Diagnosis of Primary Lung Tumors.—An accurate diagnosis of lung tumor, with a definite opinion as to its malignant or benign character, Christie says, can be made in many cases by consideration of the mode of onset, the preliminary symptoms, and the roentgen-ray findings. When, however, the roentgen-ray appearance is not characteristic, the diagnosis must be established by the further course of the disease, and the presence of such signs as enlarged lymph nodes in the neck or axilla, and the character of the sputum and pleural effusions. It must further be kept in mind that there are certain noncancerous conditions occurring in the lung which may readily be confused with cancer, especially if only the roentgenologic evidence is relied on. Among those especially like to lead to error are gumma of the lung, mediastinitis, caseous pneumonia and certain inflammatory processes about the hilum.

Archives of Internal Medicine, Chicago

April 15, 1921, **27**, No. 4

*Metabolism in Pellagra: Study of Urine. M. X. Sullivan, R. E. Stanton and P. R. Dawson, Spartanburg, S. C.—p. 387.
*Hemochromatosis. W. B. Blanton and W. Healy, Richmond, Va.—p. 406.
*One Thousand One Hundred Forty-Six Goiters in One Thousand Seven Hundred Eighty-Three Persons. S. Levin, Lake Linden, Mich.—p. 422.
Variations of Acid Concentration in Different Portions of the Gastric Chyme, Methods of Gastric Analysis. F. D. Gorham, St. Louis.—p. 434.
Nature of Specific Hemolysins and a Standard Method of Preparing Antisheep Hemolysin. L. G. Hadjopoulos, New York.—p. 441.
*Effects of Quinin on Liver, Blood Cells and Urine of Rabbits. D. M. Siperstein and M. Litman, Minneapolis.—p. 449.
*Pulmonary Botryomycosis. F. A. McJunkin, St. Louis.—p. 457.
*Idiopathic Purpura with Unusual Features. A. S. Rosenfeld, Portland, Ore.—p. 465.
Present Status of Cardiodynamic Studies on Normal and Pathologic Hearts. C. J. Wiggers, Cleveland.—p. 475.
*Interpolated Contractions of Heart with Especial Reference to Their Effect on Radial Pulse. M. M. Myers and P. D. White.—p. 503.

Urine in Pellagra.—The results of the study of the urine in pellagra made in the U. S. Pellagra Hospital in 1917, Sullivan and his associates summarize as follows: The mineral metabolism seemed to be abnormal especially in the actively pellagrous stage as witnessed by the low P_2O_5 excretion despite the fact that the diet taken at the time was a generous one with abundance of milk. Indications were present of a heightened putrefactive process in the intestines. The presence of casts or albumin or both casts and albumin in the urine gave evidence of more or less kidney change in about 50 per cent. of the cases. Marked pellagra can occur with no evidence of kidney change. There was low excretion of total nitrogen and the ordinary urinary ingredients. The urea ratio, in general, was low, and in certain cases with fair total nitrogen the urea ratio was lower than should be expected—a finding which suggests liver insufficiency. There was a heightened ratio for ammonia nitrogen and undetermined nitrogen. The metabolic level during the active stage of the disease was low as further shown by the low excretion of uric and creatinin. The creatinin coefficient was much below normal. The utilization of protein was found to be subnormal, even after several weeks of a remedial diet. With at least a month on the curative diet, the urinary ingredients rose to approximately normal amounts, the urea ration rose to normal and the ammonia ration fell to normal. The abnormality of the urinary findings was greater for the systemic type of pellagra than for the dermal type.

Hemochromatosis.—To the eighty-one cases of hemochromatosis reported in the literature Blanton and Healy add four. An analysis is presented of the clinical findings of cases reported in the literature and the four new cases are cited in full.

Goiter.—Levin examined 1,783 persons, ranging in age from new-born to 61 years, for enlarged thyroids. One thousand one hundred and forty-six had enlarged thyroids with 682 simple goiters, 420 adenomas and cystomas and forty-four colloid goiters. The incidence curve shows that goiters increase in both sexes during puberty, dropping to a small degree after the growth of the individual is attained. The curve remains in the female for the child-bearing period, going down at about 38 or 40 years, when it rises again for the menopause. In the male, the curve gradually drops till 35 or 40 years, when there is a small rise due to the growths in the glands asserting themselves, the male having no special metabolic change to influence the enlargement. The simple goiters maintain the high percentage till 35 years is attained and the adenoma and cystoma sustain the height of the incidence curve after that age. Levin directs attention to the fact that in a zone in which thyroid enlargements occur, there is a normal physiologic hypertrophy, and this should not be called goiter.

Effect of Quinin on Liver and Blood Cells.—Quinin hydrochlorid, administered intravenously, in moderate doses, to healthy rabbits, apparently produced progressive degenerative changes in the liver cells which increase with increasing dosage; a moderate transitory polycythemia rendered persistent by repeated dosage and polyuria.

Botriomycosis of Lung.—With the pulmonary symptoms predominating at the beginning of the disease and persisting for several weeks in such a manner as to suggest pulmonary tuberculosis, McJunkin's case resembled a primary bronchopneumonia which terminated fatally. The histologic lesion is that of a typical granuloma and is one not encountered in infections with pyogenic cocci commonly examined microscopically. The zooglea-like matrix likewise is unique. The appearance of the delicate circle of hyalin material about individual organisms, which stains positively and is not a retraction zone, suggests a true bacterial capsule, and, if confirmed by further observations, especially in connection with animal inoculation, would indicate a distinct species of capsulated coccus.

Idiopathic Purpura.—Two cases of idiopathic purpura are described by Rosenfeld which showed a familial tendency, repeated joint hemorrhages, and association of joint hemorrhages with the symptoms of Henoch's purpura. Spontaneous fracture of the olecranon occurred in one case.

Interpolated Contractions of Heart.—A brief historical review of the subject of interpolated beats is given by Myers and White; likewise, figures stating the frequency with which interpolated beats and premature ventricular contractions have been found in the graphic records of the Cardiographic Lab-

oratory of the Massachusetts General Hospital. Points in regard to the differential diagnosis of this form of arrhythmia are discussed; the five conditions from which it must be differentiated in the arterial pulse being: first, the occurrence of two premature ventricular beats in succession; second, constant alternation of the pulse in which there is a delay in the weaker beats; third, auriculoventricular heart block associated with an occasional return to one-to-one rhythm for three beats in long stretches of fourth beat which fail to appear in the arteriogram, and fifth, short paroxysms of tachycardia. Emphasis is laid on that type of tracing which is most frequently misinterpreted, namely, where in the course of a phase of regular rhythm there occurs an interpolated beat which, not showing in the curve, causes a delay and diminution in the size of the next normal wave.

California State Journal of Medicine, San Francisco

April, 1921, **19**, No. 4

Reveries of a General Practitioner. M. Creamer, Los Angeles.—p. 143.
Indications for Infusion of Blood Substitutes and Transfusion of Blood in Cases of Traumatic Hemorrhage and Shock. E. Butler, San Francisco.—p. 145.
Fractured Femur. H. H. Dignan, San Francisco.—p. 147.
Episodic Mental States and Border-line Conditions in Psychiatry. C. L. Allen, Los Angeles.—p. 150.
For Better Treatment for Crippled Children. H. L. Langnecker, San Francisco.—p. 152.
Early Diagnosis of Pulmonary Tuberculosis. J. C. King, Banning.—p. 152.
Pat Miredale Undergoes Serious Operations. E. B. Breitinger, Bakersfield, Calif.—p. 156.
Modern Radiotherapy. F. H. Rodenbaugh, San Francisco.—p. 156.

Endocrinology, Los Angeles

March, 1921, **5**, No. 2

Diabetes Insipidus a Hypopituitary Syndrome. G. Maranon, Madrid.—p. 159.
Physiologic Hyperthyroidism. H. Brooks, New York City.—p. 177.
Degenerative Changes in Seminal Epithelium and Associated Hyperplasia of Interstitial Tissue in Mammalian Testis. A. Kuntz, St. Louis, Mo.—p. 190.
Special Services Rendered Human Organism by Sympathetic and Parasympathetic Systems. F. M. Pottenger, Monrovia, Calif.—p. 205.
Changes in Endocrine Glands of Tumor-Bearing Female Albino Rat. F. S. Hammett, Philadelphia.—p. 216.
Pigment Changes Following Removal of Epithelial Hypophysis and Pineal Gland in Frog Tadpole. W. J. Atwell, Buffalo.—p. 221.

Diabetes Insipidus a Hypopituitary Syndrome.—Maranon believes that the internal secretion of the posterior lobe of the hypophysis exercises, physiologically, a controlling action on the elimination of water through the renal filter and that, through the disturbance of this controlling mechanism, diabetes insipidus is produced. In his opinion, the hypophysial oliguric hormone may, perhaps, act partly directly on the renal cell (either increasing its power to concentrate dissolved matter, or increasing its capacity to retain water), and partly by means of the nervous system, collaborating with the oliguric centers at the base of the encephalon as postulated by Pende. The modifications of these centers would be transmitted to the kidney, probably by way of the sympathetic, as some of the experiments seem to show. It is very probable, as Cushing and Biedl have suggested, that the hypophysial hormone ascends by the tuber cinereum to act on the proximal mesencephalic centers. Maranon and Rosique showed experimentally in one instance that the lesion producing a very intense diabetes insipidus was the fibrous scar which was produced around the shore which separated the hypophysis from the nervous tissue of the infundibular region. Maranon insists on the importance of the emotions in the pathogeny of this disease.

Physiologic Hyperthyroidism.—Brooks points out that a condition may exist under which symptoms of thyroid disturbance appear, symptoms mistakenly regarded as indicating serious and permanent disease and that in such cases treatment should not be directed to prevent or circumvent these efforts on the part of the gland, but to direct or guide nature's efforts. It is unwise to attempt measures, and particularly radical measures, which inflict changes or limitations of a permanent character on the gland. There are many conditions which, particularly in youth, are met only by an active secretion on the part of the thyroid; in fact, very many of the so-called youthful characteristics are really manifestations of thyroid activity. The tachycardia of the pronounced hyperthyroid patient is represented in the physiologic hyperthyroidism stage by palpitation. The physiologic demand for an increased thyroid secretion is often met by an increase in the size as well as in the activity of this gland, and in most instances this is induced by a hypertrophy or hyperplasia, as well as by a mere hypersecretion of the gland. The large and prominent thyroid is typical of the mentality and emotional side of both boy and girl toward the development of sex characters and full maturity. The more charming the young woman, the more virile and attractive the youth, the more constantly will it be found that a large gland is present and the more certainly will it be noted that, under normal conditions, such a person responds to emotional and mental stimuli with a quick aggressive and appropriate reaction. Still another physiologic evidence of thyroid activity or overactivity in the youth is an increased demand and utilization of food. Again at this time, artistic perceptions are most keen. All these traits are dependent, at least to a considerable extent on a certain degree of thyroid flexibility and overactivity. Periods of great emotional output, are accompanied by enlargements, though perhaps temporary, of the thyroid. The tremor, characteristic of both the hyperthyroid and the enthusiast, may be present, and even exophthalmus may become evident or accentuated. Surgical or other medical treatment is not indicated. Failure to comprehend and correctly manage these cases leads to exophthalmic goiter, neurasthenia or eventual nervous and physical inadequacy.

Function of Sympathetic and Parasympathetic Systems.—Pottenger directs attention to the fact that the sympathetic nerves and the sympatheticotropic glands of internal secretion aid in the defense of the organism against such condition as enemies from without, infection, pain, anger, injury, heat, cold, asphyxia, and shock. The parasympathetic nerves and parasympathicotropic glands of internal secretion provide the body with an appetite and the secretions—salivary, gastric, biliary, pancreatic, and intestinal—for the digestion of food, and motor power to the gastro-intestinal tube, for mixing the food with the secretions and propelling it onward, and for expelling the refuse from the body.

Changes in Endocrine Glands of Tumor Bearing Animals.—A case is described by Hammett of a tumor-bearing albino rat in which marked alterations in weights of all the endocrine glands were observed at dissection. The hypofunction or hyperfunction of these several tissues serves to explain some of the abnormalities observed in the other tissues, and can be correlated in part with certain clinical observations reported on man.

Journal of Industrial Hygiene, Boston

April, 1921, **2**, No. 12

Campaign Against Miners' Nystagmus in Colliery District of Liege, Belgium. N. Stassen.—p. 451.
Tetrachlorethane Poisoning and Its Prevention. D. C. Parmenter.—p. 456.
Discussion of Public Health Bulletin No. 106, Comparison of an Eight-Hour Plant and a Ten-Hour Plant. A. H. Ryan.—p. 466.
Reply to Discussion of Public Health Bulletin No. 106, Comparison of An Eight-Hour Plant and a Ten-Hour Plant. P. S. Florence.—p. 479.

Journal of Infectious Diseases, Chicago

April, 1921, **28**, No. 4

Avian Botulism (Type A) or Limber Neck. R. Graham and H. Schwarze, Urbana.—p. 317.
*Diphtheria Carriers and Their Treatment with Mercurochrome. G. A. Gray and B. I. Meyer, Mare Island, Calif.—p. 323.
*Diphtheria Infections, with Particular Reference to Carriers and to Wound Infections with B. Diphtheriae. J. S. Simmons; J. T. Wearn and O. B. Williams, Takoma Park, D. C.—p. 327.
*Bacterial Parasites of Human Mucous Membranes. W. W. Oliver and W. B. Wherry, Cincinnati.—p. 341.
Study of an Organism from Nephritis in Sheep. C. P. Fitch and D. C. Beaver, St. Paul.—p. 345.
Study of Gaseous Requirements for Growth of Various Bacteria. G. E. Rockwell, Cincinnati.—p. 352.
*Influenza Studies. IV. Effect of Vaccination Against Influenza and Some Other Respiratory Infections. E. O. Jordan and W. B. Sharp, Chicago.—p. 357.
*New Method of Adding Cresol to Antitoxins and Antiserums. C. Krumwiede and E. J. Banzhaz, New York.—p. 367.
Correlation of Rabbit Pneumonia and Human Influenzal Pneumonia. C. C. Saelhof, Chicago.—p. 374.

Treatment of Diphtheria Carriers with Mercurochrome.—On the occurrence of three cases of diphtheria all patients,

personnel and civilian employees in the U. S. Naval Hospital compound were immediately examined and Schick tests, nose and throat cultures were made. Of 544 Schick tests, 104, or 19.1 per cent. were positive. These susceptible men were immediately given 1,000 units of diphtheria antitoxin and a course of three injections of toxinantitoxin was commenced. All new patients brought to the hospital were first taken to the laboratory where cultures were made and where they received the Schick test before they were admitttd to their wards. A rather high percentage of carriers of diphtheria bacilli were found, 162 of 680 persons examined being positive. The majority of positive reactions were secured from the nasal passages, and Gray and Meyer believe were in no small part due to the thoroughness used in making the cultures, by having the swabs come in contact with all parts of the mucous membranes. Their percentages of 23.8 is considerably in excess of the 2.76 per cent. found in 3,215 persons examined at Camp Sherman, Ohio, in 1918. It conforms, however, fairly closely with the figures of Labit of the French army, who obtained 28.9 per cent., and at times 50 per cent., of carriers in the environment of diphtheria at a military hospital. Of the total number of carriers Gray and Meyer were able to treat, consecutively, thoroughly and systematically, only ninety. Eighty-eight of the ninety carriers treated with mercurochrome were made carrier free with an average of only 19.1 treatments or applications of the germicide. The remaining two of the ninety carriers resisted all efforts as they continued to harbor the bacilli in tonsillar crypts and in the scars of a peritonsillar abscess. In not over ten persons treated with mercurochrome solution was there any complaint as to the germicide being irritating. The 1 per cent. solution of mercurochrome was used as a routine application by means of a medicine dropper, spray or swab. In the more resistant cases, the 2 per cent. strength was used and in cases showing any evidences of congestion or irritation, the 0.5 per cent. strength was used.

Diphtheria Carriers.—Between October, 1918, and August, 1919, seventy-five cases of diphtheria bacilli were treated at the Walter Reed General Hospital. The successful treatment of carriers depended not so much on the kind of antiseptic used but on the ability to reach the organism with the antiseptic, or when possible on complete removal of the infected foci. Simmons and his associates urge that the danger of active wound infection should be recognized and early treatment with large doses of diphtheria antitoxin should be given. Forty-eight and 42 per cent., respectively, of the strains from contact throat carriers and wound carriers were very virulent, while 84.6 per cent. of those from convalescent throat carriers and 80 per cent. of those from wound cases were very virulent. Neither morphology, fermentation reactions nor any other cultural characteristic gave any indication of the degree of virulence of the organism studied. No diphtheria bacilli were found in cultures of the blood, urine or feces of cases or carriers, except from one fatal wound case postmortem.

Bacterial Parasites of Human Mucous Membranes.—In an examination of the flora of human mucous membranes, Oliver and Wherry isolated *Bacterium melaninogenicum* (N. Sp.) from the throat, tonsils, infected surgical wound of the abdomen, from urine collected as aseptically as possible from a suspected focal infection of the kidney, and from the feces of a case of chronic dysentery superimposed on an original amebic infection; *B. duplex-monliquefaciens*, in bronchial sputum; *M. minutissimus* (N. Sp.) from the mixed flora in the aphthous ulcers of the gingival and buccal mucosa of a case of postpoliomyelitic paralysis; *M. reniformis* (*Diplococcus reniformis*, Cottet, 1900) was isolated from the vaginal pus in a case of vulvovaginitis in a child.

Effect of Vaccination Against Influenza.—The prophylactic effect of a widely used vaccine containing Pfeiffer bacilli, streptococci and pneumococci has been studied clinically and statistically by Jordan and Sharp. They recorded during a period of about seven months the respiratory ailments which developed among 6,066 persons, approximately half of whom had received the vaccine. Some of these were attacked by influenza in the 1920 wave, which occurred within two months of the vaccination; in addition, the usual number of pneumonia and common cold cases among those observed afford material for comparisons. Rhinitis and bronchitis developed with frequency about equal in vaccinated and unvaccinated groups. The influenza attacks among the 2,873 vaccinated numbered 118 (4.1 per cent.) and among the 3,193 unvaccinated numbered 152 (4.8 per cent.); seven pneumonia complications with two deaths occurred among the 118 vaccinated patients and twelve with two deaths in the 152 unvaccinated. Both the influenza and pneumonia attack rates are hence somewhat lower among the vaccinated, but the difference is not great. Pneumonia, not associated with influenza, was also less frequent among the vaccinated, only six of nineteen pneumonia patients having been vaccinated. That any considerable degree of protection against influenza was conferred by the vaccine seems unlikely.

New Method of Adding Cresol to Antiserums.—A mixture of equal parts of ether and cresol is presented by Krumwiede and Banzhaf as a new preservative for antitoxins and serums. This mixture is added in amounts necessary to give the required concentration of cresol. The addition of this mixture causes much less precipitate than does cresol alone. Subsequent precipitation is not necessarily limited by the ether, it is never greater than that in products containing cresol alone. The mixture of ether and cresol is more strongly antiseptic than cresol alone. In therapeutic application, the ether is not a disadvantage. In the case of intravenously injected antitoxin, the indication that the ether may under certain circumstances reduce the incidence of adverse reactions warrants further comparative work. Ether may be added to the toxin-antitoxin mixture with disturbing the balance of the mixture.

Journal of Medical Research, Boston

November, 1920, January, 1921, **62**, No. 2

*Russell's Fuchsin Bodies. G. McConnell and A. Lang, Cleveland.—p. 99.
Blood of Normal Monkeys. E. B. Krumbhaar and J. H. Musser, Jr., Philadelphia.—p. 105.
Studies in Diphtheroids. R. R. Mellon, Rochester, N. Y.—p. 111.
*Bacillus Botulinus. P. F. Orr, Boston.—p. 127.
Heterotransplantation of Kidney. L. Loeb, St. Louis.—p. 137.
Development of Mononuclear Phagocyte of Lung. H. H. Permar, Pittsburgh.—p. 143.
*Leukocytic and Fibroblastic Reactions About Transplanted Tissues. M. S. Fleisher, St. Louis.—p. 163.
*Autotransplantation and Homoiotransplantation of Cornea, Iris and Lens. M. S. Fleisher, St. Louis.—p. 173.
Tuberculosis in Guinea-Pigs with an Experimentally Produced Endothelial Leukocytosis. F. A. McJunkin, St. Louis.—p. 202.
Migration and Fate of Mononuclear Phagocyte of Lung. H. H. Permar, Pittsburgh.—p. 209.
Nature of Action of Nonspecific Protein in Disease Processes. I. Typhoid Protein (Dead Typhoid Bacilli) and Soluble Toxin. D. M. Cowie and R. M. Kempton, Ann Arbor, Mich.

Russel's Fuchsin Bodies.—In the course of a study of 130 specimens of dental granulomas, not abscesses, McConnell and Lang were struck by the frequent occurrence of Russell's fuchsin bodies, eighty-six of the cases containing them in greater or lesser number. Further study of these bodies leads them to believe that they are the result of degenerative changes occurring in the cell protoplasm but not in the nucleus. The type most commonly affected is the plasma cell, but any other variety of tissue cell may undergo a similar degeneration. The red blood cells are not concerned in their formation.

Bacillus Botulinus Toxin.—The toxins produced by ten different strains of *Bacillus botulinus* were found by Orr to be comparatively thermolabile. The heating of any food material to the boiling point destroyed all trace of botulinus toxin which might be present. The toxin produced by Strain 2 (Nevin) is apparently much more resistant than any of the other toxins.

Reactions About Transplanted Tissues.—It is shown by Fleisher that the reactions about the transplanted tissues in immunized heterologous animals are essentially of the same nature as reactions in normal heterologous animals, with the additional feature that the leukocytic invasion is slowed in the immune animals. Various tentative suggestions are made to explain those differences in the homologous and heterologous reactions.

Study of Transplanted Tissue.—As a result of Fleisher's work it appears possible that living tissue, either connective tissue or epithelium, is not invaded by host tissue of either

the same of different type. The maintenance of a balance between tissues would seem, therefore, to depend, at least in part, on the life of the tissue.

Journal of Parasitology, Urbana, Ill.

March, 1921, **7**, No. 3

Measurements of Trypanosoma Diemyctyli from Different Hosts and Their Relation to Specific Identification, Heredity and Environment. R. W. Hegner.—p. 105.
New Blood Fluke from Turtles; Proparorchis Artericola gen. et spec. nov. H. B. Ward.—p. 114.
New Amphibian Cestode. L. B. Dickey.—p. 129.
Microsporidia Parasitic in Copepods. R. Kudo.—p. 137.
*Effects of Secretions of Certain Parasitic Nematodes on Coagulation of Blood. B. Schwartz.—p. 144.
Microsporidian Occurring in Smelt. F. Schrader.—p. 151.
First Instar of Wohlfahrtia Vigil Walker. O. A. Johannsen.—p. 154.

Effect of Secretions of Nematodes on Blood Coagulation.—In view of the fact that the delay in coagulation of blood due to extracts of nematodes occurs in vitro, that it varies with extracts of different species of worms, and that extracts of certain species produce no delay in coagulation, Schwartz believes that it may be concluded that specific substances, other than proteins in solution, must be involved. The substances in question appear to be physiologically related to hirudin and snake venom, and like the latter are probably part of a complex of toxic principles. So far as present knowledge goes, nematodes which contain substances that inhibit coagulation of blood to a marked degree are zoologically related, belonging to the family Strongylidae, the members of which have a buccal capsule adapted to lacerating the intestinal mucosa. That the injection of their secretions into the intestinal mucosa, by certain biting nematodes, resulting in minute hemorrhages, is of etiologic importance in nematode diseases appears very probable.

Laryngoscope, St. Louis

March, 1921, **31**, No. 3

Results Obtained from One Year's Use of Audiometer in Otologic Clinic. L. W. Dean and C. C. Bunch, Iowa City.—p. 137.
Some of More Important Measurements of Parts of Temporal Bone. E. Amberg, Detroit.—p. 147.
Lymph Drainage of Accessory Nasal Sinuses. W. V. Mullin and C. T. Ryder, Colorado Springs.—p. 158.
Four Cases of Radical Frontal Sinus Operation with Unusual Pathologic Findings. F. O. Lewis, Philadelphia.—p. 179.
Simple, Bloodless and Painless Operation for Complete Exenteration of Ethmoid Labyrinth. H. Hays, New York.—p. 186.
Operative Procedure in Chronic Persistent Obstruction in Lachrymal Sac. F. H. Brandt, Boise, Idaho.—p. 191.
—p. 207.
Diagnostic Sign in Progressive Deafness. J. W. Downey, Baltimore.

Medical Record, New York

April 23, 1921, **99**, No. 17

Genesis of Some So-Called Neurasthenic States. T. A. Williams, Washington, D. C.—p. 681.
Fads and Fashions in Medical Practice. F. B. Wynn, Indianapolis.—p. 683.
Nature of Educational Hygiene. I. S. Wile, New York.—p. 688.
Maternal Mortality Associated with Pregnancy and Labor in Bronx During Past Ten Years. A. J. Rongy, New York.—p. 691.
Value of Pedographs in Recording and Diagnosing Abnormal Foot Conditions in Children. J. Grossman, New York.—p. 696.
Tourniquet for Arsphenamin Injections. G. E. Barnes, Herkimer, N. Y.—p. 698.
Concept of Roentgen-Ray Pathology. XII. Gastropathies. A. J. Pacini, Washington, D. C.—p. 699.
Dementia Praecox. J. T. A. Wright, Amityville, N. Y.—p. 702.

Michigan State Med. Society Journal, Grand Rapids

April, 1921, **20**, No. 4

Clinical Features as Determining Factors in Application of Radium and Roentgen Rays in Malignancy. P. Eisen, Detroit.—p. 119.
Physiologic Action of and Therapeutic Indications for Roentgen Rays. J. H. Dempster, Detroit.—p. 123.
Congenital Syphilis. C. K. Valade, Detroit.—p. 127.
Essential Hypertension. F. M. Barker, Detroit.—p. 130.
Two Cases of Endemic Typhus—Brill's Disease. W. D. Mayer, Detroit. —p. 132.

Nebraska State Medical Journal, Norfolk

April, 1921, **6**, No. 4

Four Cases of Pituitary Disease. G. W. Covey, Lincoln.—p. 97.
Thrombosis and Embolism of Mesenteric Vessels. B. B. Davis, Omaha. —p. 101.
Variation in Strength of Tincture of Digitalis Dispensed in Lincoln as Tested by Biochemical Methods. A. L. Smith, Lincoln.—p. 104.
Chronic Prostatitis. W. L. Ross, Jr., Omaha.—p. 106.
Dr. Irving W. Potter's Method of Elective Version in Obstetrics. D. Hansen, Lincoln.—p. 109.
Epidemic Encephalitis in Gage County. F. W. Buckley, Beatrice.—p. 111.

Rhode Island Medical Journal, Providence

April, 1921, **4**, No. 4

Light from Under Bushel. C. W. Skelton, Providence.—p. 55.
Some Important Fractures Frequently Overlooked. J. D. Kelley, Providence.—p. 59.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

January, 1921, **43**, Part 4

*Left-Handedness and Mirror Writing, Especially Among Defective Children. H. Gordon.—p. 313.
Tonus and Reflexes. J. K. A. W. Salomonson, Amsterdam, Holland. —p. 369.
Aphasia: An Historical Review. H. Head.—p. 390.

Lefthandedness in Mentally Defective.—The observations reported on by Bordon were made mostly in special schools for mentally defective children. The investigation originated from the observation made in April, 1918. In one of the classes nine (37 per cent.) of the children out of twenty-four were writing with their left hands, and doing most of their work lefthandedly. The percentage of lefthanded children (i. e., with marked lefthanded activities) in ordinary schools was 7.3; in mental defective schools it was 18.2. Lefthandedness in mental defective schools was more frequently associated with defects of speech than is righthandedness. In the case of twins, when one is lefthanded and the other righthanded, the lefthanded twin is frequently backward, less developed, highly nervous, or even in a mental defective school, whereas the righthanded twin is normal and, in an ordinary elementary school. Among twins (a boy and a girl) there is a very high percentage (nearly one third) where one is lefthanded and the other righthanded. Among normal children the lefthanded are frequently the most efficient and capable; among the mental defectives it is exactly the reverse, lefthandedness being often associated with marked deficiency. Spontaneous change of lefthandedness to righthandedness in writing among mental defectives is often found to be associated with progress in school work and in intelligence. The hypothesis suggested by Gordon is that something has occurred which has interfered with the proper functioning of the dominant hemisphere—in the majority of cases described it is the left hemisphere. Such a supposition would explain: (1) Why there are so many lefthanded in mental defective schools. The left hemisphere being affected has interfered with the proper functioning of the right hand, perhaps in only a slight degree, as many among the older children change spontaneously from left to the right hand in writing. The same cause has probably affected the functioning of many of the higher intellectual centers, supposed to be situated in the same hemisphere, involving such peculiarities as mirror writing and defective speech. (2) It would also explain why, in the case of left and righthand twins, the lefthanded twin and not the righthanded is found in these special schools.

Medical Journal of Australia, Sidney

Feb. 26, 1921, **1**, No. 9

Papilledema. A. E. Mills.—p. 167.
Banti's Disease in Child. W. S. Brown.—p. 172.

March 26, 1921, **1**, No. 13

Developments in Production of Therapeutic Serums in Australia. W. J. Penfold.—p. 245.
Urethral Irrigation. J. F. Mackenzie.—p. 250.
Epithelioma of Hand, with Tendency to Spontaneous Cure. C. E. Corlette and K. Inglis.—p. 250.

National Medical Journal of China, Shanghai

December, 1920, **6**, No. 4

Treatment of Uterine Fibroids. Way-ling New.—p. 226.
Soy Bean Products. W. H. Adolph and C. M. Wu.—p. 231.
Work of Council on Health Education. W. W. Peter.—p. 234.
Scientific Medicine and Public Health. T. N. Tang.—p. 236.

Bulletin Médical, Paris

March 26, 1921, **35**, No. 13

Bacteriology of Diphtheria. L. Martin and G. Loiseau.—p. 253.
*Abnormal Forms of Diphtheria. H. Darré.—p. 259.
Doses of Diphtheria Antitoxin. Loiseau and D. de la Rivière.—p. 264.
*Prophylaxis of Diphtheria. L. Martin and G. Loiseau.—p. 267.

Abnormal Forms of Diphtheria.—Darré discusses the simple catarrhal form of sore throat, without membranes, but for which the diphtheria bacilli are responsible; every sore throat is suspicious when diphtheria is epidemic. Another perplexing form is when the diphtheria attacks adenoids first. The extreme pallor, small pulse and other signs of severe intoxication should give the alarm, for the diphtheria toxin is absorbed with extraordinary rapidity from adenoiditis. Another type described simulates follicular tonsillitis or there may be a form suggesting herpes. The most deceptive form is when the violent pain in the neck, trismus and the aspect of the pharynx suggest a phlegmon around the tonsil.

Prophylaxis of Diphtheria in Boarding School.—Two cases of diphtheria developed among the 600 girls of the school. They were isolated and ten carriers were found among those that sat near them at table and class. The carriers were isolated, but another case developed, and it was found that the places at the table left vacant by the isolated had been filled by other girls. This resulted in discovery of eleven more carriers. When this practice was stopped, there were no further cases. Some of the carriers showed virulent bacilli up to 122 and 132 days. Possibly the Schick test might reveal which of the carriers are less liable to be contagious as they possess antibodies enough to attenuate the diphtheria bacilli.

Bulletins de la Société Médicale des Hôpitaux, Paris

March 11, 1921, **45**, No. 9

Relations Between Epidemic Encephalitis and Epidemic Hiccup. G. Lemoine.—p. 321. Idem. Dargein and Plazy.—p. 326.
Case of Icterohemorrhagic Spirochetosis. Dargein and Plazy.—p. 323.
Primary Pneumococcus Septicemia. Brouardel and J. Renard.—p. 328.
Urticaria from Fatigue and Colloidoclasis. E. Joltrain.—p. 330.
Paget's Bone Disease with Wassermann Reaction. Pasteur Vallery-Radot, H. Stévenin and E. Fatou.—p. 339.
Prognosis and Sequelae of Epidemic Encephalitis. Cruchet.—p. 344.
*Arterial Tension in Tabes. P. E. Démètre.—p. 349.
*The Benzoin Reaction in Spinal Fluid. G. Guillain, G. Laroche and P. Lechelle.—p. 355.
Compression of Spinal Cord in Case of Recklinghausen's Disease. G. Guillain.—p. 357.
Vaccine Therapy of Typhoid Spondylitis. H. Dufour, Debray and Guyard.—p. 364.
Vaccine Therapy Effectual Even in Superposed Experimental Infection. H. Dufour.—p. 366.

Blood Pressure and Epinephrin Treatment in Tabes.—Démètre has found the arterial tension exceptionally low in all tabetic patients examined, free from pronounced disease of the aorta. The assumption of a deficit in epinephrin conforms to the facts observed in regard to the asthenia and hypotension, for epinephrin treatment restores these conditions to practically normal and arrests the gastric crises and the lightning pains. The cure of neuralgia with epinephrin has been reported from various quarters and Röhmer found the gastric crisis arrested in fifteen or twenty minutes and that the effect lasted for several hours in his four cases, and also in a case of laryngeal and in one of rectal crises. Zanfrognini obtained similar results with epinephrin by the mouth. Marinesco has given the epinephrin by subcutaneous injection, with complete success in eight of the tabetics thus treated, and Démètre has had constant success in this line in quite an extensive experience. He injects 1 c.c. of the 1:1,000 solution of epinephrin, repeating it next day at need. Lightning pains subside completely in half an hour; the tabetics feel stronger and the blood pressure rises. He tabulates the details of fifteen cases, saying that the benefit from epinephrin confirms that the gastric crises and the lightning pains are manifestations brought on by subnormal arterial pressure. Hence treatment with epinephrin is logical.

The Benzoin Reaction in the Spinal Fluid.—Guillain, Laroche and Lechelle state that their colloidal benzoin reaction was constant in all cases of general paresis and of active neurosyphilis, while it was invariably negative in nonsyphilitic disease of the nervous system. The colloidal gold reaction is sometimes positive in other than syphilitic disease of the nervous system, especially in epidemic encephalitis.

Journal de Médecine de Bordeaux

Feb. 25, 1921, **92**, No. 4

Fibrous Polyp of Rectum in Elderly Man. J. Daraignez.—p. 91.
*Treatment of Fracture of Joints and of Separation of Epiphysis. H. L. Rocher and Lasserre.—p. 92.
Reform of Medical Education. B. Mothe.—p. 95.

Treatment of Fracture of Joints and Separation of Epiphyses.—The importance of radioscopy with these injuries is emphasized. It is wise also to apply stereoscopic radiography. The reduction should be done under the control of the roentgen ray and generally under inhalation anesthesia. Radioscopy should also be applied with the plaster cast in place, examining in two planes, one perpendicular to the other. If the position is not correct, an operation is called for at once; it may reveal that interposition of tissue prevents proper reduction. By heeding these rules, fine results can be constantly obtained with fracture of a joint, even fracture of the elbow in children.

March 25, 1921, **92**, No. 6

Tumor in Broad Ligament. P. Bégouin and F. Papin.—p. 147.
Mastoiditis in Infants. A. Brindel.—p. 149.
Stages of Development of Constipation. Dargein.—p. 154.
*Sydenham and Epidemic Encephalitis. H. G. de Cardenal.—p. 161.

Sydenham and Epidemic Encephalitis.—Cardenal quotes from Sydenham's "Practice of Medicine" an account of an epidemic fever, 1673 to 1675, which seems to be identical with the present epidemic encephalitis. He kept the patients from lying down, fearing the congestion of the brain therefrom, and he described persisting hiccup as forming part of the clinical picture. He refers to mild nervous sequelae of the disease as continuing for some time, but disappearing as strength was regained.

Journal de Radiologie et d'Electrologie, Paris

January, 1921, **5**, No. 1

*Measurement of Doses in Roentgenology. H. Guilleminot.—p. 1.
*Radiotherapy of Uterine Cancer at Erlangen. A. Béclère.—p. 10.
The Organization of a Hospital Roentgenologic Service. A. Gunsett.—p. 23.
Roentgenography of the Teeth. Majour and Laquerrière.—p. 27.
Dermoid Cyst in Frontal Sinus. Berruyer and Laquerrière.—p. 29.
Technic for Roentgenologic Examination of the Aorta. Delherm and Thoyer-Rozat.—p. 30.

Roentgen-Ray Dosage.—Guilleminot recalls that Villard introduced twelve years ago a method of measuring the quantity of roentgen rays generated by the ionization of the air. But this and the chemical and other quantimeters lack a definite, reliable, constant unit. He has worked out a unit for fluoroscopic quantimetry which, he says, can be applied with far greater precision than any of the other methods allow. The intensity is estimated by calculation of the square of the distance in comparison with a luminous scale.

Radiologic Treatment of Uterine Cancer.—Béclère quotes from Seitz and Wintz' recent publications giving the technic and results of their deep cross-fire roentgen-ray treatment in twenty-four cases of uterine cancer. Three sittings were given, from twelve to fourteen weeks apart, and in all but one of the cases the cancer has vanished from sight, from palpation, and from microscopic examination. The interval since is too short to speak of a permanent cure.

Journal d'Urologie, Paris

January, 1921, **11**, No. 1

Hydronephrosis Simulating Hydatid Cyst in Liver. E. Bérard and C. Dunet.—p. 1.
*Catheterization of the Ureter. R. Darget.—p. 5.
*Cystic Dilatation of Lower End of Ureter. Pollet.—p. 15.
Giant Kidney Calculi. E. Christian.—p. 25.

Catheterization of Ureter.—Darget discusses the blunders that may result from misinterpretation of the findings with the ureter catheter. In the absence of pus, the concentration in urea and chlorids will reveal the diseased side, but the findings as to the functional value of the sound kidney are often misleading. The Ambard constant is a more reliable guide.

Cystic Dilatation of Lower End of Ureter.—Pollet reports three cases to emphasize the importance of opening up the cyst to permit free flow of urine. The simplest means for this is with the electrocautery.

Revista Méxicana de Biología, Mexico, D. F.

November, 1920, **1**, No. 2

*Endemic Goiter in Mexico. F. Castillo Nájera.—p. 47.
Bacteriology of Rhinoscleroma. E. Cervera.—p. 61.
Experimental Injection with Pulque Fungi. F. Ocaranza.—p. 74.
*Biology of the Ovary. E. Ramirez and I. Ochoterena.—p. 88.

Endemic Goiter in Mexico.—The data presented show that goiter is very prevalent in certain parts of Mexico, up to 20 or 25 per cent. in parts of the state of Guerrero. It does not seem to be endemic in the central states nor in the federal district nor in the peninsula of lower California, but the province of Mexico has a few endemic foci, as also the states on the West coast, and Vera Cruz has certain zones with 8 to 10 per cent. of the population affected. Two cases are reported in which 50 cg. of thymol twice a day for three months, with intervals of five to ten days each fortnight, was followed by reduction of the goiter.

Biology of the Ovary.—A number of photomicrograms are given which confirm the antagonistic action of the interstitial cell and the corpus luteum; as one begins functioning the other tends to rest.

Semana Médica, Buenos Aires

Feb. 10, 1921, **28**, No. 6

Thermo-Esthesiometer. A. M. Sierra.—p. 153.
Multiple Growth Exostoses. A. Casnubón and F. Bazán.—p. 160.
*Operative Treatment of Pulmonary Tuberculosis. Gumersindo Sayago and J. M. Allende.—p. 164.
Cocain Addiction. Mally.—p. 179.

Clinical Thermo-Esthesiometer.—Sierra reviews different methods for testing the sensibility of the skin to heat, cold and touch, and describes some simple ones of his own devising. Fuming sulphuric acid in a third of water gives a temperature of over 104 F. Ammonium sulphocyanid in an equal volume of water reduces the temperature below 41 F. A test tube, drawn out to a point, containing one of these serves for measuring the sensibility of the skin, as throwing light on disease of the nervous system.

Multiple Exostoses.—The exostoses began to develop at the age of 4; the girl is now 13. Scarcely any bone is exempt, but the majority are near the epiphyses.

Operations for Pulmonary Tuberculosis.—In two cases of pulmonary tuberculosis with adhesion of the diseased lung to the chest wall and large cavity, one patient was a woman of 38, and marked improvement followed resection of the seventh to the tenth ribs, a total extent of 40 cm. In the second case, a bone-periosteum flap from the crest of the tibia was implanted in the subcutaneous cellular tissue and beneath the periosteum of the fourth rib, over the cavity. The aim was to induce a reaction in the pleura which would start sclerosis and immobilize the wall of the chest over the diseased portion of the lung.

Deutsches Archiv für klinische Medizin, Leipzig

March 8, 1921, **135**, No. 5-6

*Forms of Jaundice. F. Rosenthal and P. Holzer.—p. 257.
Pathology of Circulation in the Coronaries. B. Kisch.—p. 281.
Periarteritis Nodosa. C. Krotz.—p. 311.
Acute Polymyositis After Gas Poisoning. G. Scharmann.—p. 336.
*Toxic Swelling of Liver. A. Bittorf and M. v. Falkenhausen.—p. 346.
Leukocyte Blood Picture During Menstruation. K. Garling.—p. 353.
*Acute Yellow Atrophy of the Liver. W. Weigeldt.—p. 358.
Tactile Perception of Second Pulmonary Sound. Gerhardt.—p. 368.
*Erasmus and the Plague. O. Feis.—p. 371.

Mechanical and Dynamic Jaundice.—Rosenthal and Holzer discuss the proportions of bilirubin and cholesterin in the blood in the different forms of jaundice.

Toxic Swelling of the Liver.—The liver was smooth and enlarged in the ten cases described but it was not tender and was not hard. Pronounced alimentary levulosuria testified to severe functional derangement of the liver but there was no fever. The cause seemed to be intestinal autointoxication from improper and inadequate food.

Acute Yellow Atrophy of the Liver.—Weigeldt reports two more cases with leukocyte inclusions. Histochemical analysis of the vacuoles in the polynuclear neutrophil leukocytes revealed that they were droplets of fat in all the three cases.

Erasmus and the Plague.—A letter written by Erasmus of Rotterdam at the beginning of the sixteenth century describes Erasmus' sickness on a trip through Germany, evidently a mild form of bubonic plague.

Deutsche medizinische Wochenschrift, Berlin

Jan. 13, 1921, **47**, No. 2

*Experimental Testing of Prophylactic Preparations Against Venereal Disease. P. Manteufel and H. Zschucke.—p. 37.
Problems in Syphilis Treatment. F. Lesser.—p. 39. Conc'n in No. 3.
Changes in Blood Pressure After Injection of Epinephrin No Gage of Tonus of Autonomic Nervous System. Lehmann.—p. 41.
Test for Albumoses and Peptones in Urine. Fittipaldi.—p. 42.
*Indican in Kidney Disease. E. Becher.—p. 42.
Value of Alcohol Test Breakfast. Friedrich and Neumann.—p. 43.
Treatment of Infantile Gonorrheal Vulvovaginitis. Patschke.—p. 44.
Regulation of Dosage in Phototherapy. Jentzsch-Graefe.—p. 46.
The Koch-Lilienfeld Roentgen-Ray Apparatus. Hirsch.—p. 46.
General Exanthem After Roentgen Irradiation. Ginzberg.—p. 47.
Eradication of Pediculi Pubis. L. Dub.—p. 48.
The Eye and the Central Nervous System. Steindorff.—p. 48.

Experimental Tests of Individual Prophylactic Measures Against Venereal Disease.—Manteufel's report was summarized in the Berlin Letter, p. 1183.

Indican in Kidney Disease.—Becher states that the Obermeyer urine indican reaction is not adapted for demonstration of indican in the blood, as it is not sufficiently sensitive. He prefers the more active method of Jolles, in which a hydrochloric acid solution containing thymol and ferric chlorid is employed. Indican increases in the blood parallel with the residual nitrogen, sometimes even a little more rapidly, in anuria of mechanical origin or from acute necrotic nephrosis or extensive interstitial focal nephritis. In acute nephritis, indican increases ordinarily relatively late and only to a slight extent as compared with urea and residual nitrogen, the kidney probably passing it more readily than it does urea. In chronic renal insufficiency, indican in the blood is increased earlier and more markedly than residual nitrogen or urea. Specific disturbances of secretion as affecting indican are doubtless responsible. In infectious diseases and cardiac insufficiency there is no parallelism between the indican and the uremia. In renal insufficiency the indican that normally occurs only in the blood passes also into the tissues, exudates and the spinal fluid. The most marked increase is, however, in the blood serum. After nephrectomy there is an increase of residual nitrogen and urea, due to the toxic effect of decomposed albumin, but no parallel increase in indican.

Jahrbuch für Kinderheilkunde, Berlin

1921, **94**, No. 3

*Myography of Spasmophilia. O Bossert and R. Gralka.—p. 145.
*The Incubation in Infectious Disease. K. Preisich.—p. 173.
Results of Butter-Gruel Infant Feeding. S. Wolff.—p. 183.
*Protein Therapy in Infants. E. Slawik.—p. 192.

Spasmophilia.—Bossert and Gralka would restrict the term spasmophilia to children with overexcitable nervous system from constitutional causes. This type of true spasmophilia may be influenced by dieting. There is also an overexcitability left by infectious diseases. In a third group the cause of the overexcitability is still a mystery. The response of the muscles to electric tests confirms this classification. Abnormal parathyroid functioning modifies calcium metabolism, and this may entail a tendency to edema, the subcutaneous tissues imbibing water; also to carpopedal spasm from the musculature sharing in this imbibition. In contrast to the tetany group, is the group in which laryngospasm is the cardinal symptom; there is usually extreme hyperexcitability of the nerves while the muscle responses are like those in normal children. These children have been fed with cow's milk. The calcium deficiency in this group seems to be felt most in the brain. Quest noted in child cadavers with exceptionally low calcium content of the brain, that the children had all died from convulsions. The prognosis depends on the special organ involved. In rachitis it is the bones that suffer most from the deficiency of calcium; in tetany, the muscles; with laryngospasm, the nervous system, and with convulsions, the brain. These various types may be amenable to dietetic and medical measures, the overexcitability subsiding with the other symptoms. Myographic curves of each type are reproduced.

Incubation with Infectious Diseases.—Preisich protests against accepting for the incubation the period between known contact with infection and the development of disease. The infecting agent may be harbored like any saprophyte before it begins to exert a pathogenic action. From this moment to development of symptoms is the true incubation period. One of the practical conclusions from his research is that after complete convalescence from an infectious disease, the patient should wait, before resuming his ordinary life, for a period corresponding to the generally accepted incubation or latent period.

Protein Therapy for Infants.—Slawik injected infants parenterally with white of egg, breast milk or other substances in treatment of various pathologic conditions. The results were disappointing, probably on account of the inadequate development of the defensive forces at this age. Actual benefit was realized only with pyodermatitis and gonococcus infection.

Monatsschrift f. Geb. u. Gynäkologie, Berlin

January, 1921, **54**, No. 1

*Postoperative Thrombosis. R. T. v. Jaschke.—p. 1.
Case of Laceration of Wall of Vagina. Dyroff.—p. 7.
Coition Injury of Vagina in Puerperium. Kayser.—p. 13.
*Acute Edema of Cervix During Delivery. E. Zweifel.—p. 20.
Horny Pavement Cell Cancer of Ovary. M. Boettger.—p. 22.
*Experiences with Radiotherapy. W. Benthin.—p. 34; Idem. H. Treber.—p. 40.

Prevention of Postoperative Thrombosis.—Jaschke says that the factors which are liable to entail thrombosis are mainly mechanical. Since his table has been arranged for the legs to lie straight and on cushions, there has been no instance of thrombosis originating in the popliteal space. But the most important prophylactic measure, he declares, is the routine practice of giving digitalis before the operation if there is the slightest doubt as to the functional capacity of the cardiovascular system. This tends to keep the blood stream from getting sluggish at points where thrombosis otherwise is liable to develop. Scrupulous hemostasis is another factor in success, ligating the vessels separately without clamping them, also enforcing massage, passive movements, and systematic breathing exercises—all three or four times a day. In his last 1,362 operations of all kinds, thrombosis has developed in only 0.9 per cent.; with embolism in 0.15 per cent. Getting the patients up early has reduced the thrombosis cases by a half and the embolism cases by a third, compared with the preceding six year period.

Acute Edema of the Portio at Delivery.—Zweifel adds another case to the twenty-two he has compiled from the records. The prolapsed vagina and portio were reduced and the foot of the bed raised. Labor began a few hours later and spontaneous delivery followed, and by the tenth day there was not much left of the edema.

Experiences with Radiotherapy.—Benthin relates that in two cases a cancer developed in the ovary one and three years after an intensive course of roentgen-ray exposures given as a precautionary measure after removal of a cancer in the cervix. Another unusual experience was the pigmentation of the whole body after two series of roentgen and radium exposures. Roentgen exposures during two years in treatment of excessive menstrual hemorrhages brought transient amenorrhea with certain symptoms of the artificial menopause in one case, but a normal pregnancy followed almost at once, with delivery at term of a healthy child. One woman of 35 developed a radium ulcer of the intestine from prophylactic radium treatment after removal of a uterine cancer. The radium ulcer was mistaken for a rectal cancer and was excised.

Remote Results with Radiotherapy of Cancer.—Treber tabulates the outcome in 783 cases of cancer of the uterine cervix at four German clinics given actinotherapy in 1913 to 1915. There are 12.3 per cent., 11, 22.3 and 20 per cent. still surviving. The survivors include nineteen women whose condition was absolutely inoperable. Treber's practical conclusion is that operative measures alone do not make such a good final showing as irradiation alone. He advocates treating operable cancer of the cervix with mixed cross-fire. Then, eight or twelve weeks later, when there are no further clinical signs of the cancer, he operates by the Wertheim abdominal total extirpation, and four weeks after this begins the prophylactic exposures. This has been the method in vogue during the last year at the Munich clinic.

Monatsschrift für Kinderheilkunde, Leipzig

November, 1920, **19**, No. 2

*Modification of Milk for Infant Feeding. E. Moro.—p. 113.
Metabolism in Rickets. Freise and Rupprecht.—p. 115.
*Congenital Defects at Base of Spinal Cord. H. Gelpke.—p. 137.
*Rectal Prolapse in Children. W. Schwarzburger.—p. 168.

Triple Dilution of Milk for Infant Feeding.—Moro opposes feeding new-born babes one-third milk to two-thirds water. He thinks that such dilutions are too weak. For the last twenty years he has recommended a 50 per cent. dilution of whole milk for the new-born, and has never seen any bad results from it.

Congenital Defects in Lower Segments of Spinal Cord.—Gelpke says that myelodysplasia and spina bifida may be associated, but in that case they are coordinate phenomena of the same disturbance in development; neither is subordinate. Fuchs' "rudimentary forms of spina bifida" he regards as signs of degeneration that give a valuable indication of the existence of a spina bifida occulta.

Rectal Prolapse in Children.—Schwarzburger applied in thirty-seven cases of prolapse of rectum or anus, Thiersch's method of running a silver wire around the anus under the skin. The results were generally satisfactory though the wire ring caused some pain at first. Most of these children were between 1½ and 2 years of age. Undernutrition proved, during the war period, to be a predisposing cause. Diarrhea is a common precipitating factor. Oxyurids are incriminated by some writers. The prognosis in children is vastly more favorable than in adults. As a rule, prolapse in very young children will heal spontaneously before the age of 5. During the epidemic of dysentery, 1919, many cases of prolapse appeared in children when the epidemic was at its height, but disappeared with the dysentery.

Münchener medizinische Wochenschrift, Munich

Oct. 29, 1920, **67**, No. 44

A "Diagnostic Tuberculin." E. Moro.—p. 1253.
*Etiology of Dupuytren's Contracture. G. Ledderhose.—p. 1254.
Operative Treatment of Extension Contracture in the First Phalanx of Finger. Schede.—p. 1256.
Latent Syphilis. P. Schneider.—p. 1259.
Silver Arsphenamin in Multiple Sclerosis. E. Speer.—p. 1260.
Spirochete Staining in Nerve Tissue. F. Jahnel.—p. 1263.
Vagotonia in Relation to the Ear. C. Biehl.—p. 1263.
*Intraperitoneal Infusion. M. Weinberg.—p. 1264.

Dupuytren's Contracture and Arthritis Deformans.—Ledderhose says that his investigations on the clinical aspects of arthritis deformans have led him to the conviction that Dupuytren's contracture or fasciitis palmaris is an integral part of the symptomatology of arthritis deformans; furthermore, that a patient who presents symptoms of arthritis deformans in any of the large joints or in the spine will also give evidence of characteristic changes in the palmar aponeurosis. He thinks he has proved that the first expressions of arthritis deformans may be frequently demonstrated from the end of the "teens" on, if attention is directed to the symptomatic limitations of motion in the joints and furthermore to slightly visible, slightly palpable and (in roentgenograms) easily perceptible changes of form in the articulating surfaces. Arthritis deformans seems to rest on a predisposition—possibly a chemical alteration of the articular cartilage—which through static disturbances, traumas, or the wearing processes of advancing age is developed into an anatomic and clinical morbid entity. There is marked agreement between arthritis and fasciitis in that both frequently begin in youth, may remain entirely latent for a long period, and often after a long life have not progressed so far as to present pronounced deformation of joints or marked contracture of fingers.

Intraperitoneal Instead of Subcutaneous Infusion.—Weinberg reports that intraperitoneal infusion may, in properly selected cases, be superior to subcutaneous infusion in dealing with sick children suffering from loss of fluids. The opportunities for resorption are excellent, and the procedure

is exceedingly rapid. The shock effects are very slight. If the capacity for resorption is good, in a given case, intraperitoneal infusion may make it possible to tide over a dangerous, acute stage in which subcutaneous infusion would fail to accomplish the purpose.

Therapeutische Halbmonatshefte, Berlin

Dec. 1, 1920, **34**, No. 23

Pathology and Surgery of the Prostate. A. W. Fischer.—p. 658.
Therapeutic Effect of Heat Rays in Otology. W. Oeken.—p. 661.
A Modified Type of Tourniquet. G. Baller.—p. 668.

Wiener Archiv für innere Medizin, Vienna

Feb. 15, 1921, **2**, No. 2

*Vascular Hypertonia. Hitzenberger and Richter-Quittner.—p. 189.
*Calcium in Blood Corpuscles. Richter-Quittner.—p. 217.
*Infectious Irritation of Bone Marrow. R. Löwy and H. Dimmel.—p. 233.
*Pathology of Gastric Secretion. M. Leist and O. Weltmann.—p. 245.
Morphologic Basis for Flint's Murmur. H. Elias.—p. 271.
*Blood Picture After Injection of Calcium. O. A. Rösler.—p. 281.
*Dental Pathology and Internal Disease. E. Antonius and A. Czepa.—p. 293.
Polyneuritis After Influenza. O. Klein.—p. 329.

Metabolism with Vascular Hypertonia.—The sugar content of the blood in thirty-eight cases of high blood pressure is tabulated, with other details. They show that hyperglycemia was the rule with both primary and secondary vascular hypertonia. The hyperglycemia in these conditions differs from that in diabetes in that it is independent of the diet. It is evidently not the result of disturbance in assimilation of sugar but a permanent overproduction. With primary vascular hypertonia, there is frequently an excess of uric acid in the blood, but this is not due to retention of uric acid, and hence, differs essentially from the hyperuricacidemia of gout. The vascular hypertonia, hyperglycemia and hyperuricacidemia may be the result of an excess of epinephrin. The vascular hypertonia is the most prominent symptom, but the hyperglycemia is usually constant, and both seem to be the manifestation of some disturbance in metabolism, possibly from excessive functioning of the chromaffine tissue. Alcoholism, abuse of nicotine, excessive protein diet, emotional stress, syphilis, and lead poisoning may be favoring factors. Around this may group a number of phenomena which may be due in part to the high blood pressure and in part to its consequences, the sclerosis of the arterioles. According as these phenomena develop in brain or heart or kidneys, we have a cerebral, a cardiac, abdominal or kidney type. The hypertonia increases the resistance to the blood stream in all the vessels.

Calcium Content of the Blood.—No calcium was found in the blood corpuscles of man or animals under normal conditions.

Infectious Irritation of the Bone Marrow.—Löwy and Dimmel give a colored plate and describe three cases of atypical blood picture in septic conditions, showing the wide range of reactions of which the blood-producing system is capable.

Pathology of Gastric Secretion.—Leist and Weltmann compare their findings with a modified duodenal tube in the healthy and in cases of hyperacidity or achylia. The findings in the fasting stomach and at other times showed among other things that with dropsy gastric secretion is at a remarkably low ebb. The retention of chlorids in the tissues and edema and the inability to utilize them for the gastric secretion may be responsible for this subacidity or anacidity.

The Blood Picture Under Calcium.—Rösler reports the results of extensive research on the modification of the blood picture and the blood platelets under the influence of calcium injected by the vein.

Importance of Infectious Processes at the Roots of Teeth for the Origin of Internal Diseases.—Antonius and Czepa have been raying systematically the patients in Falta's service, and found in 225 with various diseases that 66 per cent. had some infectious process at the root of one or more teeth. This was twice as many as had chronic tonsillitis. Only thirty-nine of the 148 with these teeth infectious processes were given thorough dental treatment, but the benefit in this small group confirmed the causal relation between this occult pus focus and the internal disease, nephritis, chronic septic endocarditis, joint and muscular rheumatism, neuralgia, etc. In the forty cases of endocarditis, twenty-nine showed the occult pus focus at the root of a tooth, and 92 per cent. of the twenty-five bilateral nephritis cases; in 68 per cent. no other cause for the nephritis could be discovered.

Wiener klinische Wochenschrift, Vienna

Dec. 9, 1920, **33**, No. 50

Paradoxical Effects of Heart Poisons. E. P. Pick.—p. 1081.
*Acid Reaction in Perforating Ulcer. J. Prader.—p. 1085.
*Hot Air as Hemostatic in Operations. H. Körbl.—p. 1087.
A Note on Sarcomas. L. Kumer.—p. 1088.
Tests for Malingering. F. Deutsch.—p. 1090.

Significance of Acid Reaction of Peritoneal Fluid in Perforating Ulcer.—Prader reports eleven cases which furnish considerable evidence for the assumption that an acid reaction of the peritoneal fluid in ulcer perforations, even though pathogenic bacteria may be present, is to be regarded as ordinarily indicative of a favorable prognosis, provided the general condition of the patient is fairly good. Primary closure of the peritoneal cavity without drainage is thus justified. Whether this assumption is correct will have to be established by more extensive observations.

Hot Air Current as a Hemostatic in Operative Surgery.—Körbl recommends highly the hot air current as a means of checking hemorrhage both during and after operations. The jet of hot air brings about complete checking of the hemorrhage in the operation wound in from fifteen to thirty seconds, which connotes a great saving of time and material otherwise required to ligate many small vessels. The larger bleeding vessels are ligated before the hot air current is applied. The field for this method includes more especially large wounds of the soft parts (amputation of the breast, umbilical hernia), in which the checking of hemorrhage from the many small vessels in the fatty and connective tissue requires so much time; furthermore, wounds which present large cavities (goiter operations, for example), and especially bone operations in which checking of hemorrhage by means of ligatures is not feasible and which often give rise to marked postoperative hemorrhage. Körbl has performed a series of such operations, using the hot air current as a hemostatic, and secured primary healing with no hematoma formation. In goiter operations and breast amputation he found he could dispense with the drain he had been in the habit of employing for the first few days. The method, of course, is not used in suppurative processes.

Zentralblatt für Chirurgie, Leipzig

Dec. 11, 1920, **47**, No. 50

Rare Type of Ileus After Gastro-Enterostomy. A. Fromme.—p. 1505.
Modification of Operation for Cleft Palate. M. Linnartz.—p. 1512.
Mammary Gland Enlarged After Prostatectomy. Zuckerkandl.—p. 1513.

Zentralblatt für Gynäkologie, Leipzig

Dec. 4, 1920, **44**, No. 49

Meaning of Term "Metropathia Haemorrhagica." R. Schröder.—p. 1401.
Abnormally Long Gestation. B. Schulz.—p. 1404.
*Adnexitis Complicating Pregnancy. H. Martius.—p. 1410.
*Treatment of Eclampsia. C. H. Stratz.—p. 1415.
Prolapse Through Urethra of Bladder Papilloma. B. Ottow.—p. 1416.
*Urethral Tampons. H. Kritzler.—p. 1419.

Adnexitis as a Complication of Pregnancy.—Martius reports two cases, one of which resulted fatally, to illustrate that adnexitis as a complication of pregnancy is not so rare as is commonly supposed, but that the condition remains latent and is not diagnosed. The treatment should follow the same principles as apart from pregnancy.

Prophylaxis of Eclampsia.—Stratz reports the case of a young pregnant woman whose mother had passed through a severe attack of eclampsia. In the patient the urine was normal, but at the ninth month she complained of occipital headache. Taking into account her mother's experience, he at once instituted prophylactic treatment: milk diet, small doses of chloral, etc. Three days later considerable albumin appeared in the urine, but in a few days even this had disappeared. The milk diet was continued for several weeks, and at term the patient gave birth to a normal child without further symptoms of eclampsia. Stratz thinks that he is justified in regarding this case as one of aborted eclampsia. Slight indications of eclampsia are sufficient to justify treatment before a definite diagnosis is established.

Urethral Tampons for Diagnostic Purposes. — Kritzler recommends slender tampons, such as dentists use, 3 cm. long, for collection of secretion in the female urethra for diagnostic purposes, more especially when gonorrhea is suspected. The tampons are left in place for three or four hours, with string attached.

Zentralblatt für innere Medizin, Leipzig

Dec. 11, 1920, **41**, No. 50

Physiognomic Signs of Congenital Syphilis. Kraupa and Runk.—p. 849.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Feb. 26, 1921, **1**, No. 9

The Roentgen Rays. H. Haga.—p. 1104.
The Roentgen Rays in the Service of Medicine. J. K. A. Wertheim Salomonson.—p. 1112.
*Antianaphylaxis in Treatment of Asthma, etc. J. Dekker.—p. 1122.

Therapeutic Antianaphylaxis.—Dekker reviews a number of articles that have appeared in THE JOURNAL and in the *Presse médicale* on this subject during 1919 and 1920. He refers particularly to the works on asthma, urticaria, migraine, etc., and relates his success with the peptone treatment in a case of long recurring asthma.

Acta Medica Scandinavica, Stockholm

Nov. 10, 1920, **54**, No. 1

*The Blood Platelet Count. H. C. Gram.—p. 1.
*Duration of Systole. L. S. Fridericia.—p. 17.
*Migration of Fat. H. C. Geelmuyden.—p. 51. Conc'n in No. 2, p. 147.
*Mode of Action of Meningococcus Antiserum. O. Thomsen and F. Wulff.—p. 65.

Blood Platelet Count.—Gram found a striking parallelism between the erythrocyte volume and the hemoglobin percentage in 611 cases of various diseases. Hence from the hemoglobin figure, the number of erythrocytes can be computed, and on this basis the platelets can be estimated. The platelets are counted in the sedimentation plasma of citrated venous blood. Platelet counts below 200,000 are often accompanied with hemorrhages. References to 125 publications on the platelets are listed, and the independence of the platelets from the other formed elements of the blood is emphasized.

Duration of Systole.—Fridericia discusses here the pathologic changes in the duration of the electrocardiogram of the ventricle. The systole is shorter with a negative T peak, and the abnormally long systole with weak heart and mild aorta disease throws light on both diagnosis and prognosis, as he describes with tabulated details of 124 cases.

Passage of Fat to the Liver.—Geelmuyden states that he found glycogen in the liver of ten diabetic coma cadavers but the highest fat content was 7 per cent., even with high lipemia. He explains that carbohydrates favor the production of sugar from fat in diabetes. The new production of sugar occurs in the liver, and at the expense of fat, and possibly of albumin. The carbohydrates thus act like a poison for the metabolism. They induce the fat to migrate to the liver, with resulting production of excess of sugar, and glycosuria. The mistake in the study of diabetes in the past has been that the elements of the metabolism have been studied separately, instead of embracing the whole field of the blood sugar and glycogen, the glycosuria, fat migration and ketonuria, albumin transformations, and the metabolism of matter and energy. Diabetic hyperglycemia and glycosuria are not due to defective oxidation of carbohydrate in the organism, but to excessive production at the expense of both fat and albumin. Pregnancy glycosuria is an actual diabetes except that it is transient. Phosphorus and chloroform poisoning induce the passage of fat into the liver, with fat infiltration or fatty degeneration, lipemia and ketonuria, but no or very little glycosuria. If, as seems to be the case, the sugar content of the blood drops abnormally low in chloroform poisoning, this may be the cause of tardy chloroform fatalities. The action of chloroform in a diabetic may suddenly exaggerate production of ketone bodies, and thus bring on coma. In the periodical acetone vomiting of children, the migration of fat and the ketonuria occur in their purest form. Fat may pass into the urine and the blood, and the sugar may drop from 0.14 to 0.07 per cent. but there is no glycosuria. Vomiting usually ushers in ketonuria and migration of fat. There is migration of fat during fasting; the glycogen in the liver is also at a low ebb, but there is no glycosuria. The cause of the overproduction of sugar in diabetes is probably to be sought in the nervous or endocrine systems, not in the metabolism.

Mode of Action of Serotherapy. — This communication reports the results and explanation of experimental and clinical research on antimeningococcus serum. Phagocytosis was much more pronounced with a homologous antiserum.

Hospitalstidende, Copenhagen

Jan. 19, 1921, **64**, No. 3

Meningococcus Infection Problems. O. Thomsen and F. Wulff.—p. 33. Begun in No. 2.—p. 17.

Jan. 26, 1921, **64**, No. 4

*Experimental Research on Influence of Exertion on Size of Heart. K. Secher.—p. 49. Conc'n in No. 5, p. 65.

Influence of Physical Exertion on Size of Heart.—Secher tabulates the heart findings in 31 wild rats (brown) forced to run until exhausted, comparing them with 11 normal rats of the same species and with 11 that died from the effects, at once or within a few hours up to three days. The findings confirm that acute overexertion entails dilatation of the heart and that this may reach a fatal point, but also that the acute dilatation may retrogress. The rat hearts increased by 15 per cent. to 20 or 27.6 per cent. over the normal size. In a further series of experiments with laboratory rats, 25 were given daily training in a treadmill and the findings are compared with those in 10 normal controls. They confirm that training enables the heart to stand extreme exertion without dilatation, the heart muscle growing capable of standing great strain. The mass of muscle also increased by about 5 per cent. The results thus confirm the general assumptions on this subject, including Külb's research on war dogs, and the findings with comparative anatomy which show that the swiftest animals and birds have the relatively largest hearts.

Feb. 2, 1921, **64**, No. 5

Atrophy of Left Thorax with Right Tuberculosis. V. Friis-Møller.—p. 73. Conc'n in No. 6, p. 81.

Feb. 9, 1921, **64**, No. 6

*Pathogenesis of Köhler's Disease. H. Abrahamsen.—p. 87.

Köhler's Disease. — Abrahamsen gives roentgenograms showing the almost complete absence of the scaphoid bone in a boy of 7 who had recently begun to limp and complain of pains. There was no history of trauma or paralysis, and the developmental defect was entirely different from the findings with Köhler's disease. The boy was given thyroid treatment for two or three months, and the bone proliferated rapidly but irregularly, so that it soon assumed the aspect characteristic of typical Köhler's disease. It seems evident that the developmental defect is the primary lesion.

Hygiea, Stockholm

March 16, 1921, **83**, No. 5

Etiology of Influenza. H. L. Davide.—p.150. Conc'n No. 6, p. 177.

Ugeskrift for Læger, Copenhagen

Feb. 17, 1921, **83**, No. 7

*Destruction of Pleural Adhesions. N. R. Christoffersen.—p. 243.
Dyspepsia with Appendicitis and Cholecystitis. Wildenskov.—p. 249.

Feb. 24, 1921, **83**, No. 8

Parkinsonian Type of Epidemic Encephalitis. P. Levison.—p. 275.
Aviators' Psychology. J. Fog.—p. 280.

Breaking up Pleural Adhesions.—Christoffersen has applied in three cases, described in detail, Jacobaeus' method of destroying bands in the pleura by cauterizing them with a long thin platinum cautery introduced through a trocar. The work is done under control of an endoscope, likewise of narrow caliber, and introduced through a trocar. The procedure is simple and easy, he says, when one has learned to manage the thoracoscope. Jacobaeus had applied this technic in seventeen cases in 1916, and he and others have used it since with gratifying results, rendering artificial pneumothorax possible in cases otherwise excluded from its benefits. Four roentgenograms show conditions "before and after."